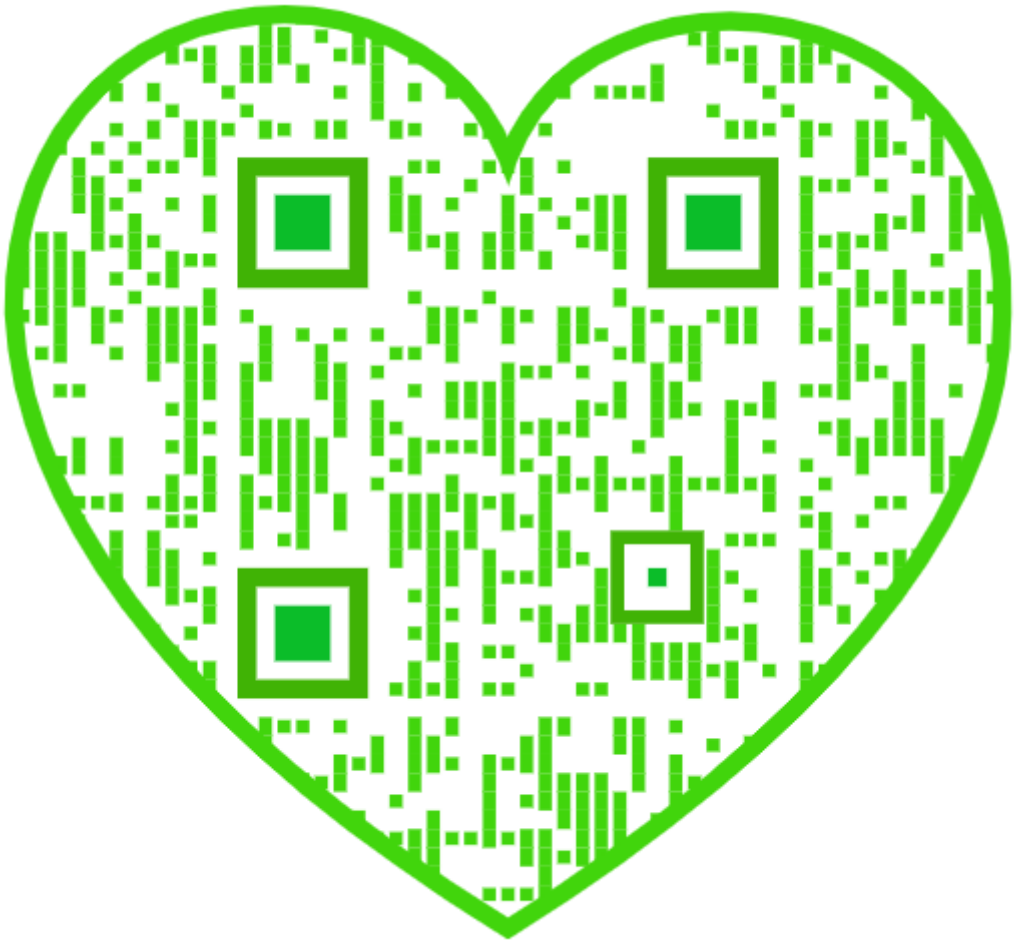

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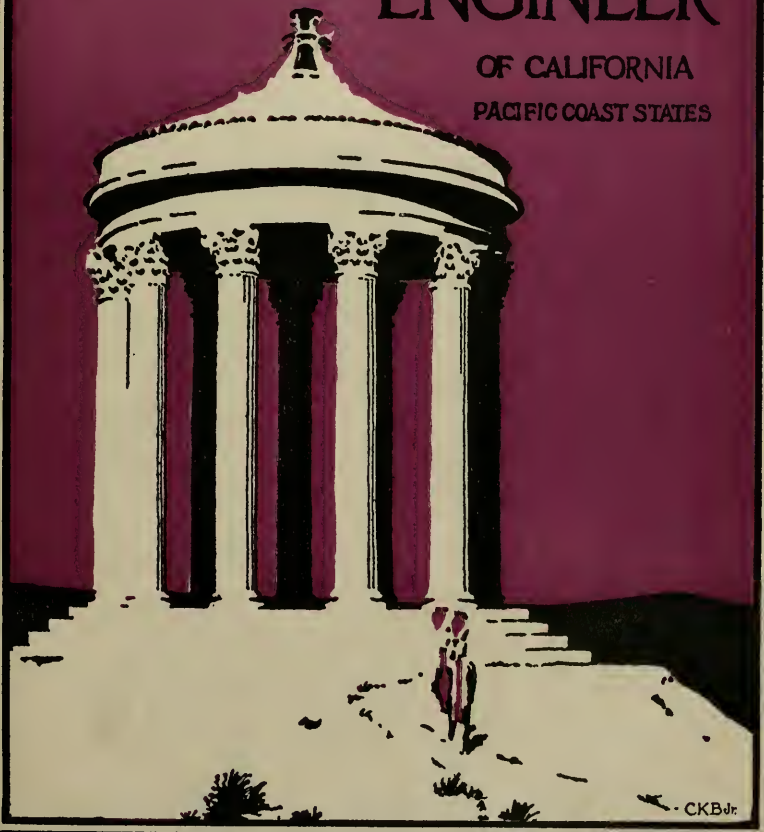

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NOVEMBER, 1911 --

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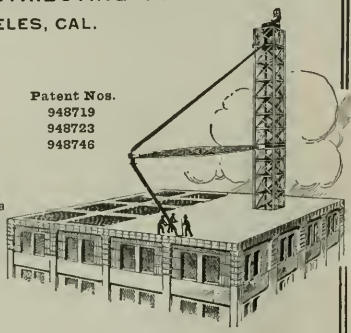

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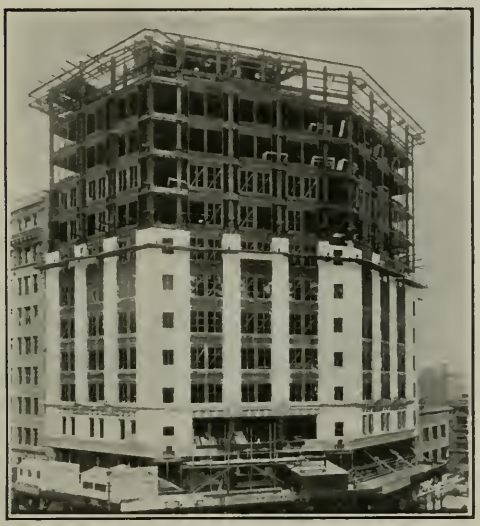

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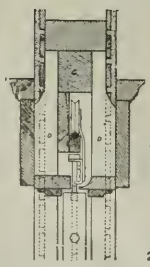

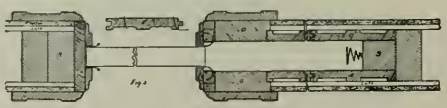

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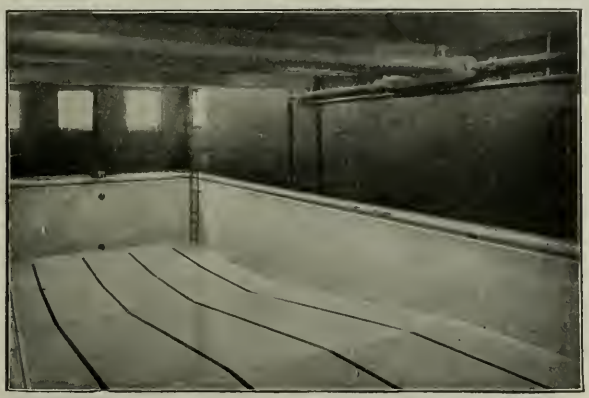

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Union Metal Corner Company, 206 Summer St., Boston, represented on the Pacific Coast by Waterhouse & Price.

CRUSHED ROCK
Natomas Consolidated of California, 203 Hagelstein Bldg., Sacramento, Cal.
Niles Rock, sold by California Building Material Company.....Pacific Bldg., S. F.
J. P. Holland.....Army St. Wharf, S. F. Phone Mission 5466.

DAMP-PROOFING COMPOUND
Boyd & Moore.....356 Market St., S. F.
Glidden's Liquid Rubber, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
H. D. Samuel Co....Monadnock Bldg., S. F.
John L. Fox.....207 Monadnock Bldg.
"Pabco" Damp Proofing Compound, sold by Paraffine Paint Co.....38 First St., S. F.
Parrott & Co., agents for Genasco Positive Seal Damp Proof Paint.
"Protectorine," Compound, sold by Boyd & Moore.....356 Market St., S. F.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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"Imperial" Waterproofing, sold by Baker Bros., San Francisco; Braun Chemical Co., Los Angeles; W. O. Stamps, Portland and B. W. Gaisford, Seattle, Wash.
John L. Fox....207 Monadnock Bldg., S. F.

DOOR HANGERS
Johns Door Hanger Manufacturing Company, 832-838 Folsom St., S. F.
Pitcher Hanger, sold by Pacific Tank Company.....231 Berry St., S. F.
Reliance Hanger, sold by Sartorius Co., S. F.; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

DOOR OPENER
G. Rischmuller .....Builders' Ex., S. F.
3442 19th St., S. F.

DOORS—FREIGHT ELEVATOR
"Cross" Counterbalance Automatic, Boyd & Moore, Agents.....356 Market St., S. F.

DOORS—WAREHOUSE
"Cross" Horizontal Folding Doors, Boyd & Moore, Agents .....356 Market St., S. F.

DUMB WAITERS
Energy Dumb Waiters, Boyd & Moore, Agents.....356 Market St., S. F.
Wells & Spencer Machine Company, 173 Beale St., S. F.

ELECTRICAL CONTRACTORS
Butte Engineering Co..683 Howard St., S. F.
Central Electric Co..185 Stevenson St., S. F.
Electric Appliance Co., 726 Mission St., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.
Pacific Fire Extinguisher Company, 173 Beale St., S. F.

ELEVATORS
Otis Elevator Company, Stockton and North Point, S. F.
Van Emon Elevator Co.,54 Natoma St., S. F.
Wells & Spencer Machine Co., 507 Montgomery St., S. F.

ELEVATOR CARS
Cleveland Art Metal Co., Boyd & Moore, Agents .....356 Market St., S. F.

ELEVATOR DOORS
"Cross" Elevator Doors, Boyd & Moore, Inc., Agents.....356 Market St., S. F.

ELEVATORS, SIGNALS, FLASHLIGHTS AND DIAL INDICATORS
Elevator Supply & Repair Co., 593 Market St., S. F.

ENGINEERS
F. J. Amweg.....700 Marston Bldg., S. F.
W. W. Breite.....Clunie Bldg., S. F.

EXPRESS CALL SYSTEM
Elevator Supply & Repair Co., 593 Market St., S. F.

FIRE EXTINGUISHERS
Goodyear Rubber Company, 587-591 Market St., S. F.
Pacific Fire Extinguisher Co., 507 Montgomery St., S. F.

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Gladding, McBean & Company, Crocker Bldg., S. F.
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Jno. G. Sutton Co.....229 Mission St., S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., San Francisco; Branch Offices, Portland, Seattle and Spokane.

FLOOR VARNISH
Bass-Heuter and S. F. Pioneer Varnish Works, 816 Mission St., S. F.
Standard Varnish Works, Chicago, New York and S. F.
Worden-Meeker Varnish Works, S. F. and Oakland

FLOORS—COMPOSITION AND TILE
"Kompolite".....350 Mills Bldg., S. F.

FOUNDATION CONTRACTORS
Locke Foundation Company, 1107 Crocker Bldg., S. F.

GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit.
Bowser & Co.....612 Howard St., S. F.

GARBAGE CHUTES
Bradshaw Garbage Chute, sold by C. T. Jacobsen.....524 Pine St., S. F.

GAS GRATES AND LOGS
Backus Patent Gas Grates and Logs, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

GLASS—PRISM, ART, ETC.
California Art Glass Works, 768 Mission St., S. F.
United Glass Co.....115 Turk St., S. F.

GRAVEL, SAND AND CRUSHED ROCK
Bay Development Co....153 Berry St., S. F.
California Bldg., Material Co., Pacific Bldg., S. F.
Del Monte White Sand, sold by Pacific Improvement Co.....Crocker Bldg., S. F.
Grant Gravel Co.....87 Third St., S. F.
J. P. Holland.....Army St. Wharf, S. F. Phone Mission 5466.
Natomas Consolidated, Peoples' Savings Bank Bldg., Sacramento

HARD WALL PLASTER
Empire Hard Wall Plaster Co., Pacific Bldg., S. F.
Reno Hard Wall Plaster, sold by Western Building Material Co., 430 California St., S. F.
Standard Supply Company, First St. and Broadway, Oakland

HARDWOOD FLOORING
Boyd & Moore.....356 Market St., S. F.
Dieckmann Hardwood Co., 244 California St., S. F.
Parrott & Co.....320 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

HARDWOOD LUMBER
Dieckmann Hardwood Co., Welch Bldg., S. F.
Niehaus & Co.....548 Brannan St., S. F.
Parrott & Co.....320 California St., S. F.
Strable Mfg. Co., First St., betw. Washington & Clay, Oakland
White Bros., Cor. Fifth and Brannan Sts., S. F.

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Niehaus & Co.....548 Brannan St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

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E. A. Howard & Co.....Howard St., S. F.

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Hart Heater Co., State Savings Bank Bldg., 13th and Franklin Sts., Oakland
Hoffman Heater, sold by Holbrook, Merrill & Stetson, San Francisco and Los Angeles.
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Pittsburg Water Heater, sold by Thos. Thieben & Co.....585 Mission St., S. F.

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Jno. G. Sutton Co.....229 Minna St., S. F.
Mangrum & Otter, Inc., 507 Mission St., S. F.
Pacific Blower & Heating Co., 17th St., betw. Mission and Valencia, S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., S. F.

HINGES
Stanley's Ball-Bearing Hinges, Stanley Co., New Britain, Conn.,

ICE MAKING MACHINES
"The Wizard," sold by the De Laval Dairy Supply Co., Drumm and Sacramento streets, San Francisco.
Triumph Ice Machine Co., H. F. Lyon, Agent, 581 Monadnock Bldg., S. F.

INK FOR DRAWING
Frederick Charlton Company, Los Angeles, Cal.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 418 Montgomery St., S. F.
Smith, Emery & Co., Inc., 651 Howard St., S. F.

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David Duncan .....340 Sansome St., S. F.

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Western Builders' Supply Co., 680 Mission St., S. F.

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John G. Ils & Co.....827 Mission St., S. F.

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Holmes Lime Company, Mutual Savings Bank Bldg., S. F.
Standard Supply Co., First St. and Broadway, Oakland
Western Lime & Cement Co., 268 Market St., S. F.

LIGHTING FIXTURES
Adams & Hollopeter....745 Mission St., S. F.
The Palmer Shop.....1345 Sutter St., S. F.

LOCKERS—METAL
Hart & Cooley Co., Boyd & Moore, Agents, 356 Market St., S. F.

LUMBER
Santa Fe Lumber Co., Seventeenth and De Haro Sts., S. F.

MANTELS
Mangrum & Otter.....561 Mission St., S. F.

MARBLE
Columbia Marble Co....268 Market St., S. F.

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Farrell & Reed.....Gunst Bldg., S. F.
Ferdinand Wagner .....609 Waller St., S. F.

METAL AND STEEL LATH
Roebling Construction Co., Crocker Bldg., S. F.

METAL CEILINGS
Berger Mnfg. Co.,....1120 Mission St., S. F.
San Francisco Metal Stamping & Corrugating Co.....Treat Ave. and 19th St., S. F.

METAL DOORS AND WINDOWS
Dahlstrom Metallic Door Co., Western office, 722 Merchants Exchange Bldg., S. F.
Rulofson Metal Window Works, Eighth and Brannan Sts., San Francisco
Waterhouse & Price.....59 Third St., S. F.
Zahner's Monarch Hollow Metal Doors and Trim, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

METAL FIRE PROOF PARTITIONS
Collins Steel Partition & Lathing Co., 757 Monadnock Bldg., S. F.

METAL SHINGLES
Meurer Bros., J. A. McDonald, Pacific Coast Agent.....Third, near Townsend St., S. F.
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California Artistic Metal and Wire Company, San Francisco

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Golden Gate Structural & Ornamental Iron Works.....1479 Mission St., S. F.
C. J. Hillard Company, Inc., 211-215 Eighth St., S. F.
Western Builders' Supply Co., Representing The L. Schreiber & Sons Co., Cincinnati

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Adamant Cement, Brick and Plaster Coating. Made by Parker, Preston & Co., Inc.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). [See adv. in this issue for Pacific Coast agents.]
Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.
Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Vitrolite Cold Water Paint, sold by Boyd & Moore.....356 Market St., S. F.
Worden-Meeker Varnish Co., S. F. & Oakland

PAINT FOR STEEL STRUCTURES
Detroit Superior Graphite Paint, manufactured by Detroit Graphite Company. C. W. Pike Company, Coast Sales Agents, 22 Battery St., S. F.
Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Goheen Carbonizing Coating, sold by Sherman Kimball, Hooker & Lent building, S. F.
Neponset Paints, manufactured by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co., 82 Second St., S. F.

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Bass-Hueter Paint Company, Mission, near Fourth St., S. F.
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R. N. Nason Company.....San Francisco
Paraffine Paint Co.....38-40 First St., S. F.
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Steiger Terra Cotta and Pottery Works, Mills Bldg, S. F.

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J. E. O'Mara.....447 Minna St., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.

PLUMBING FIXTURES
Crane Co....Second and Brannan Sts., S. F.
Haines, Jones & Cadbury Co., 851-859 Folsom St., S. F.
Jno. Douglas Co.....571 Mission St., S. F.
J. L. Mott Iron Works, D. H. Gulick, selling agent .....135 Kearny St., S. F.
N. O. Nelson Mfg. Co., 978 Howard St., S. F. 406 E. 4th St., Los Angeles
Geo. H. Tay Company, 617 Mission St., S. F.

PLUMBING SUPPLIES
California Steam & Plumbing Supply Co., Fifth and Bluxome Sts., S. F.

POTTERY
Steiger Terra Cotta and Pottery Works, Mills Bldg., S. F.

PULLEYS, SHAFTING, GEARS, ETC.
Meese and Gottfried Company.....San Francisco, Seattle, Portland, Los Angeles

RAILROADS
Southern Pacific Co.....Flood Bldg., S. F.
Western Pacific Railroad...Mills Bldg., S. F.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co.....365 Market St., S. F.
Lilley & Thurston.....82 Second St., S. F.

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J-M Asbestos Roofing, sold by H. W. Johns-Manville Co., Agencies in all the principal West Coast cities.
Pluvinox Roofing, sold by Boyd & Moore, Inc.....356 Market St., S. F.

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"Scott's Extra Coated," manufactured by Follansbee Bros. Co.....Pittsburg, Pa.
Meurer Bros. Co., A. H. McDonald, Coast Representative.....628 Third St., S. F.

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"Ferroinclave," the Brown Hoisting Machinery Co., Coast Agent, Chas. A. Levy, Balboa Bldg., S. F.
Ford & Malott, Mariposa St., at Iowa St., S. F.
F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co., 82 Second St., S. F.
Genasco Ready Roofing, sold by Parrott & Co.....320 California St., S. F.
H. D. Samuel Company, 1054 Monadnock Bldg., S. F.
Harry Larkin.....Builders' Exch., S. F.
Mackenzie Roof Co., 425 15th St., Oakland
Meurer Bros. Co., A. H. McDonald, Coast Representative.....628 Third St., S. F.
Pioneer Roll Paper Co.....Los Angeles
Western Builders' Supply Co., 680 Mission St., S. F.

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Goodyear Rubber Co...587 Market St., S. F.
New York Belting & Packing Co., 129 First Street, S. F.

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Howe Scale Company, 333 Market St., S. F.

SAND
Del Monte White Sand, sold by Pacific Improvement Company, Main office, Crocker Bldg., S. F.
J. P. Holland.....Army St. Wharf, S. F. Phone Mission 5466.

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Samson Cordage Works, Manufacturers of Solid Braided Cords and Cotton Twines, 88 Broad St., Boston, Mass.
Silver Lake A Sash Cord, represented by Sanford Plummer, 149 New Montgomery St., S. F.

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California Scagliola Co., F. Mayer, 68-70 Clara St., S. F.

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Whitaker & Ray-Wiggin Co., 776 Mission St., S. F.; 209 E. Seventh St., Los Angeles.

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Neponset Waterproof Building Papers, Neponset Florian Sound Deadening Felt, manufactured by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co.....82 Second St., S. F.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles Portland, Tacoma and Spokane.

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Dunlevy & Gettle....79 City Hall Ave., S. F.

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Boyd & Moore.....356 Market St., S. F.
Brode Iron Works....621 Howard St., S. F.
Central Iron Works...621 Florida St., S. F.
Judson Manufacturing Company, 819 Folsom Street, San Francisco
Mortenson Construction Co., 19th and Indiana Sts., S. F.
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Woods & Huddart.....356 Market St., S. F.

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Thorne Hold-Fast Metal Store Front Construction, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

SURVEYORS
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Ericsson Swedish Venetian Blinds, Boyd & Moore, Inc., Agents..356 Market St., S. F.

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Dieckmann Hardwood Co., Welch Bldg., 244 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

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The Turner Wall Bed, sold by California Plate and Window Glass Co., San Francisco and Los Angeles. Mission near 5th. S. F.
Murphy Bed Company.....San Francisco
Marshall & Stearns Co., 1154 Phelan Bldg., S. F.

WATERPROOF FINISHES
Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.

WATERPROOF FINISHES—Continued
Glidden's French Caen Stone Finish and Glidden's Waterproof Flat Finish, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
"Trus-Con" Finish, sold by Western Lime & Cement Co.....268 Market St., S. F.

WATERPROOFING FOR CONCRETE, ETC.
"Ceresit," manufactured by the Ceresit Waterproofing Co., sold by Parrott & Co., San Francisco, Los Angeles and Portland, and Julien A. Becker Co., Seattle, Wash.
Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.
Glidden's Concrete Floor Dressing and Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Neponset Waterdyke Felt and Compound, manufactured by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co.....82 Second St., S. F.
Parrott & Co.....320 California St., S. F.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Te-Pe-Co Waterproofing, sold by H. G. Clinton, 34 Ellis St., S. F.; Bass Hueter Paint Co., Pacific Coast Distributors.
The Building Material Co., Inc., 587 Monadnock Bldg., S. F.

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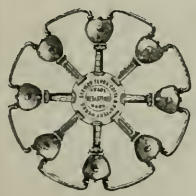

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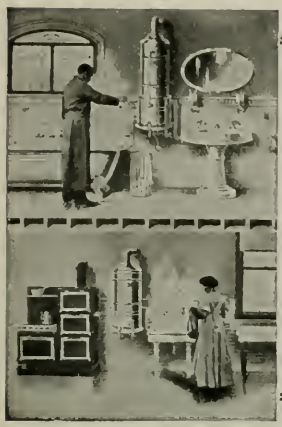

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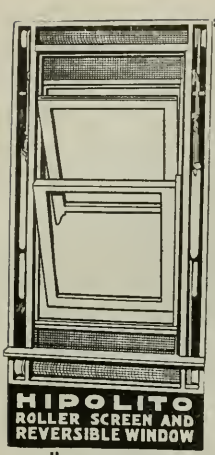

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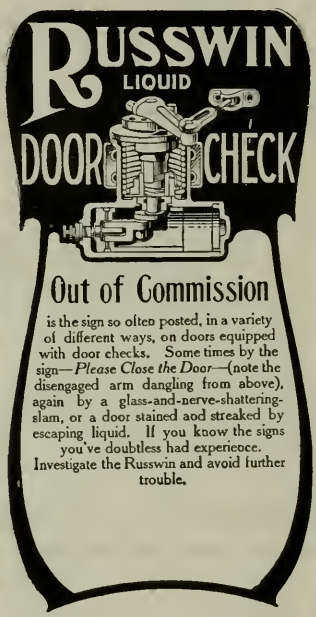

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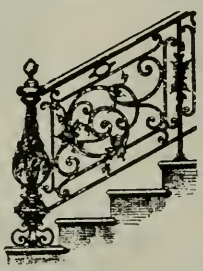

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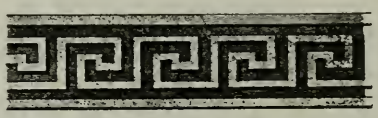

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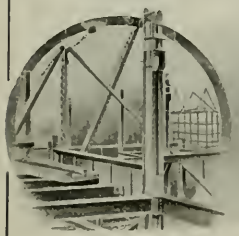

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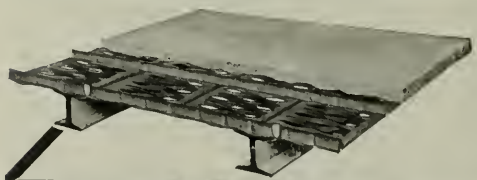

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THE
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VOL. XXVII. NOVEMBER, 1911. No. 1.

Art and Individuality*

By IRVING K. POND, President of the American Institute of Architects.

The accompanying remarkable paper on Art and Individuality by Mr. Irving K. Pond, President of the American Institute of Architects, will be found intensely interesting to architects and students of art. It is not often that the profession is favored with so clear and concise an expression of the Art Principle. It seems to be the summing up of the mature thought of one who has always been an artist, who has looked upon art as a sane expression of the creative faculty of the individual. His observation has been so clear and his analysis so solvable that he seems in this paper to have separated from true art all the alloy of false form and conception that has been a fungi growth of retardment. One strong feature of the paper, in fact its chief value, is its absence of generalization and its fullness of triumphant statement of art principles that should be taken with the same seriousness the writer evidences in its preparation. It is hoped that through his clearness of statement, Mr. Pond's paper will not only add a milestone to the art appreciation of the architect, but that all art will be benefited by his effort to give expression to his mature deductions.

IN spite of the seeming indefiniteness of the theme it is the purpose of this essay to deal clearly with certain expressions of life as embodied in Art. Prerequisite to this is a carefully surveyed field and a firm foundation; a foundation based on knowledge that the superstructure may safely soar into the realms of the imagination and fancy—soar into these realms and yet lose nothing of its reality. Clear definition makes a good foundation stone and the more crystalline the stone the better it is for our purpose.

What is Art? What is Individuality? Art? Art is the resultant of doing things beautifully!—not necessarily of doing beautiful things, certainly not of doing beautiful things badly, but of doing anything beautifully, so that having been done the thing shall have been done in accordance with the laws of Beauty. Individuality is that characteristic something which distinguishes one from another, whether that one be a person, a community, or a race. Humanity is so constituted that the art which lives, the only art which lives to bear its record of a life or of a civilization, is the art which does beautifully those things which find sympathetic response in the higher nature and instincts and reflect the finer characteristics of the individual and the race. "Art for art's sake" is an ordorless flower of an ephemeral nature. "Art for art's sake" is quite of a piece with that "virtue"

* Paper prepared for and read before the American Federation of Arts at Washington, D. C., by Mr. Pond. Also read before the Illinois Chapter of the American Institute of Architects.

which "is its own reward." There is no virtue in that art, nor art in that virtue, which is practiced in a closet or in a desert or remote from human contact and has not in its intention and design the idea of carrying a message of beauty or of helpfulness to the neighbor and through the neighbor to the community. In the practice of art as in the practice of virtue something is to be considered besides the thing or the deed, some one is to be considered besides the practitioner only. That something is the upward striving instinct in humanity—that some one is the individual, the community, the race.

There are two distinct though closely related individualities to be dealt with, then, in the construction of this topic, the individuality of the artist and the individuality of the race. From the standpoint of either, the subject is to be treated objectively and subjectively. The relationship of the artist to the expression of the race spirit is so intimate and the interrelation so intricate as to have produced certain confusion and to have caused certain misapprehension. I am going to be presumptuous enough to attempt to clarify this relation.

I shall make my excursions mostly into the fields of architecture, for architecture, not only being the master of the arts, has kept records of the great past on which we may firmly base our conclusions.

As I have indicated, only that art endures which expresses the deeper nature of the race, the higher and richer life of its day. Time wipes out the accidental and the incidental and preserves in the forms of art only that of intrinsic worth. Only great and fundamental characteristics were echoed in "the Pyramids, the Parthenon, and England's Abbeys." It is apparent, then, that the individual artist is deeply concerned in the expression of the race spirit if his influence is to live and his work to become a part of enduring history. It is a matter of free will, however, and not at all of predestination or of outside control, though that phase suggests itself: Art is conscious, otherwise it is not art, it is nature. Nature is not conscious. In unconscious obedience to the law of life, nature produces beautiful forms—unconsciously the tree leaves, the flower blooms, the feather or shell assumes its shape and takes on its beautiful colors. In conscious obedience to the laws of art the artist creates beautiful forms. When "the passive master lent his hand" he was "passive" in the sense that he did not antagonize that spirit which was calling within him—not in the sense that he did not know what he was doing. He did not leave the evolution of beauty to the "conscious stone." He did not wilfully violate rules of grammar in order to express his misconception of individuality; he did not distort lines of repose to express aspiration or movement; he did not place a surface in a distant plane and then belie its position by applying to it an advancing color. Nature, or "the vast soul" that o'er plans nature, has set once and forever the bounds of expression and the artist accepts the limitations or he is no artist. The authority behind the fundamental laws of nature and the underlying principles of art the artist recognizes and respects, or again he is no artist. Nature has just as surely touched with the spirit of eternal unrest the surface of the mighty waters as she has set the seal of everlasting silence within their cavernous depths, has just as surely set the stamp of unending repose upon the granite cliffs of the canyon as she has touched with pathetic evanescence the sweet breath of the violet which blooms on the craggy ledge. Every movement and mass in nature has its unalterable meaning which the artist never fails to recognize; nor does he lose cognizance of the absolute underlying principles of art. He knows that a certain combination of forms and

masses will induce the feeling of repose, and just as surely will another combination awaken the sentiment of aspiration. That one mass will excite to activity, another will lull to rest; one combination will inspire to reverence, to devotion, to adoration, another will irritate and depress; one will make its appeal to the intellect, another will touch the heart; one will set the heart blood a-tingling, another will chill the genial current; that one combination will express the eternal another the ephemeral. The true artist is master of these forms and consciously he uses them, as the musician manipulates the stops and keys of his instrument while the race spirit, consciously or subconsciously in him, suggests the theme.

One peculiar phase touching personality as distinguished from individuality, may be noted here. The traits of personality are of the accidentals or incidentals which art ignores. Art the mistress, demands of her subject that he be master of his implements, and if he be a master not one whit does she care what may be his personal beliefs and habits. It is temperament in the artist and not creed that counts. When Emerson makes "the hand that rounded Peter's dome" work in a spirit of "sad sincerity" and says "himself from God he could not free," and then "he builded better than he knew," he does not state the entire proposition. The impressionable mind did try sincerely and consciously to interpret impressions and to set the stamp of individuality upon his creations. He was a "willing mind," but also he was a knowing mind. Further on in the poem, emphasizing the thought, Emerson, in speaking of "the pyramids," "the Parthenon" and "England's Abbeys," says:

> "These temples grew as grows the grass,
> Art might obey but not surpass——"

But here again the poet did not tell it all. He takes no cognizance of the temperament and individuality of the artist. He was right in ignoring personality, but not in ignoring individuality. However, he nearly rights himself when he says:

> "For out of thought's interior sphere
> These wonders rose to upper air——"

Out of the conscious mind and full heart of man these temples rose in response to a call of the Creator, as voiced in the forms of nature and in the soul of man, as voiced in the level plain of the desert, in the rounded or rugged mass of the mountain, in the sunlight and in the mist persistently insistent, or playing at hide and seek o'er hill and vale; as voiced in nature, appealing to the impressionable soul of man. And so naturally, distinctively, inevitably, grew these temples in their proper environment as grow the palm, the laurel, and the English rose; but these temples assumed the distinctive forms which clothe their individuality, because the artist tried consciously to express in the most beautiful form and convincing manner the appealing characteristics which inhered in the life about him—because the artist recognized and ministered consciously to the proper spirit of the time and place, which is, in its final analysis, the sublime soul of the race.

Herein, then, lies the great lesson for the artist individualist today (for each true artist is in the very nature of things an individualist), namely, to search consciously, sincerely and unceasingly for the proper spirit of his time and place, and having found, to embody in form only such qualities and attributes as shall draw the beholder irresistibly onward and upward; not to search for something outside of his time and environment, something which shall startle the race and give it a thrill, but for some deep sentiment,

for some characteristic note, which, being sounded, the race shall, by sympathetic vibration, recognize as its own and receive to its heart, for, like the Lord, the race is mindful of its own!—and that is what has made history.

Up to now the race expression is the clearest and purest chord which has been struck in the world symphony, keyed in the joy of living—the joy of living that divine essence for the distilling of which alone art exists; and may the race expression never fade until it is wiped out in some greater joy, the character of which it is impossible for us now even to conjecture. May it still exist, the clear, pure expression of the national spirit, of the race spirit—each nation, each race, sounding the stops of its individual life, now in obligato, now in crescendo, now in diminuendo, always itself, and all the instruments guided and the score harmonized by the world soul, the "vast soul that o'er" them plans. God forbid that the instruments in this great cosmic orchestra should ever be forced to play in unison "Yankee Doodle" or Colonial, the "Marseillaise" or Beaux Arts, the "Wach am Rheim" or German Classic, the English Renaissance, or "The Dull Gray Dawn of the Morning After," or any one of a hundred tunes which on occasion an individual instrument may utter "staccato" with brilliant effect. God help us, and the joy of living, when the art of the world shall be dictated by Paris, or by New York, or by Tokio, or by Chicago, for then it will be a mean, narrow, spiritless, monotonous little world, and there will be no incentive to leave the confines of one's back stoop, or the contemplation of one's own petty thoughts! What if the Garden of Eden had dictated and had continued to dictate in the realm of art or in any of the forms of life expression! There would have been no Egypt, no delving among the tombs, no deciphering of hieroglyphics, no awesome contemplation of the Pyramids or the temples of the Nile. Greece would have been less than a spot. Rome would not have stunned us with the grandeur of her power. No shrines tearing our heart chords asunder with the intensity of the feeling wrought into their sculptured stones would have come to us out of the Middle Ages, no nice little copybook exercises would have been prepared for us by the Renaissance. If Eden had ruled and continued to rule we would have no absorbing problems to work out today—problems involving the existence of our governmental structure—our mental, spiritual and material life, and the sincere enduring art expression of it all. If Eden had ruled, if Paris had ruled, if Spain had ruled, if the Latin countries had ruled, this problem, for it is all one problem, would not have been ours. Eden would have given us no problem. Latin Europe would have given us a different one, and, ignoring our individuality, would have endeavored to settle it for us, as, today even, Latin Europe is trying to crowd its church upon us and to cram its art forms down our throats. So let us thank fortune that our own individual problem has been given us to solve in our own individual way, and let us realize that it is a problem which is worthy of a solution that shall stand out a clear, clean-cut page in the world's history of achievement—and thank fortune if we have, and if we have not, pray fate to send us men of spirit, of intellect, of heart and understanding, men attuned to the message of the world soul who shall interpret justly and fully our age to coming time.

The artist of today possesses a distinct advantage over what we deem must have been the situation of the artists of the more remote and primitive periods. We of today can study the monuments in the light of what is known of the civilizations which brought them forth, can determine definitely wherein they have failed and wherein and why they have

achieved. We have the whole realm of recorded history spread out under our eyes and can view the physchological bearing as well as the material trend of events; and in the light of this we are, or should be, the better equipped to study our own characteristics and their relation to our times. We may be too near the picture plane—too much in the picture to determine all values accurately, but we can at least determine the general trend and fix definitely upon some of the details.

As we may, and do, determine by a comparative study of the periods of the past in what measure and how sincerely the art was a true expression of the period, so may we, in the light of the past, determine to a degree as to the sincerity and truth of our own art forms and prophesy as to their probable value as a permanent expression of our own real life. In viewing the past from our point of vantage and seeing so clearly the luminous focal spot which marks the characteristic idea of a special period; and in comparing its manifestation with that of our own, we must not, because of the seeming clearness of the vision, assume too readily that the problem then was less involved than is our own, or that life in the olden time was simple as compared with ours. The purely materialistic activities of those races and periods which have left the record of a great art were as intense as ours, and in the earlier periods life was hedged about such deep imaginings, radiant fancies and abject superstitions as to make the problem of clarification one quite commensurate with our own. True, the superstitions in a measure cloud our problem, too, but the individual of today has acquired or assumed no characteristic which has not inhered in human nature throughout all time. The great lesson for us lies in the fact that in the periods which have left worthy records the individual and the race took cognizance of the finer qualities and aspirations of the period and ministered to them in terms of religion and of law and in forms of art. To religion, to law, and to art, material conquest brought its choicest offerings, and idealized materialism stands at the foundation, one might say even stands as the foundation, of religion, law and certainty of art. What of this clear vision from the past, what of the central idea behind it? The everlastingness of nature and the immortality of the soul was fundamental concept of the philosophy of Egypt and was echoed in its religion, in its ceremonial, in its art—every line and mass of the pyramids, of the rock tombs, of the Nile temples is instinct with it. Intellectuality was the keynote of Grecian life and art; and philosophy and art and religion, the very gods themselves, were reduced in the retort of the human mind, and the reduction especially as touching literature and art stands out marvelously pure and strong. The base, the entasis of the shaft, the volute, the entablature of the Ionic stands today as the highest expression of the intellectual concept of functional beauty the world has known. Whereas Egypt ministered to the soul and Greece to the intellect, Rome enforced the materialistic aspect of life and swayed through temperamental expression of physical and material power. Rome's concept of the value of direct application of physical force and the absolute domination of material mass was clean-cut and clear, but her concept of the spiritual in art was ever clouded. Ancient Rome in many of her monuments, furnished the most brutal exposition of the theory that art is merely temperamental, and that in its expression is entirely divorced from the character of the artist. Remember this when I shall take up a discussion of present day ideals and expression. Rome, Greece and Egypt held the artisan in bondage and the effect of this, too, must be remembered when considering the art forms of today.

The Middle Ages emerged from the turbulent slumber of the Dark Ages with a resistless energy and activity which finally struck its keynote in the aspiration of the human heart. The love of life and upward movement was the then characteristic of the individual and the race, and the great Gothic piles which stand as monuments to the unification of all the ideals of that period overpower us with their sublime conception and grip our hearts as they force upon us a realization of what individuals in a labor of love directed to a common end by a common spirit may accomplish. The expression of what lay in the heart of humanity was the achievement of mediaeval art. The art of the Middle Ages furnishes the sweetest and most satisfying exposition of the theory that art expression (like religion) is temperamental and entirely divorced from the personality of the artist—divorced, too, from the baser and lower instincts and characteristics of the race—and survives only as it recognizes and ministers to the higher ideals. This, too, it may be well to remember in our consideration of the trend of art today.

The most important influence on our present-day architecture comes through the Renaissance, which unfortunately is a mere cultural influence, avoiding deep feeling and sentiment and contenting itself with the refinements of form. The Renaissance was a protest against the one-sided expression of the Middle Ages and looked toward a restoration of classic culture as it had come to be understood and established in Rome. What there is in our life which responds to the baneful influence of Roman art nourished under a corrupt and degenerate empire or to the somewhat less baneful influences of an over cultivated Renaissance remains to be determined, and if determined remains to be rooted out if we are to transmit a germ of life to the ages. Do these forms appeal to us because of our mental makeup, or are they being forced upon us by artisans—God knows they are not artists—who can read but have never learned to think, who can copy but who cannot create? Is imagination wanting in our race that we accept the prevalent art form, or are we not awake? This brings us face to face with the problem of today and here in America.

What are the salient points of our American civilization which may well stamp our art and give it enduring definition? Are we and how are we perverting this definition in our present practice? We are not only an individual people, but a people of individuals, of whom, by whom and for whom the present form of our governmental structure and social forms exist. What underlies it all? The doctrine that all men are free and equal before the law, that the acceptance of freedom carries with it the acceptance of responsibilities toward our neighbor and the state, that the government is not an extraneous matter, but is the expressed will of the people voiced through delegates or representatives chosen by the people and who are servants of the people. This means an internal reign of law and order, of which the people is a part, and not domination by an external power. Therefore the art forms applicable to and developed under plutocracy, monarchy or empire and made possible of existence only under conditions of slavery, cannot justly express our social or governmental life. Therefore the stately temples expressive of the ceremonial of Egypt, the Grecian forms expressive of a totally different order, the applied forms of Rome, expressive of a domineering power, cloaking and obscuring whatever of sincere endeavor the race was struggling to put forth—nothing of all this has any place in the art of today. If our age is sincere in its altruism, sincere in its endeavor to ameliorate the condition of the workers, sincere in its efforts toward political reform, sincere in its belief in the

value of the immortal soul, sincere in its acceptance and promulgation of a religion based on brotherly love, or the brotherhood of man, sincere in its devotion to a culture which shall lie near the heart, grace the mind, and not gloss the surface merely, then this age holds no place for the extraneous application of the borrowed finery of art, but must insist on expression of the vital principles of structure and the rational development of ornament which shall not obscure the vital thought but which shall be of intrinsic worth in defining the character of the mass and in conferring charm upon the structure. The application in architecture of forms symbolic of Roman pomp and power, while appealing to the semi-cultured and by them communicated to the rabble, is menacing the development of a sincere art in this country. It were better for us and for the future that our office buildings, our libraries, our colleges, our public buildings, should be simple affairs, as simple as sincerely designed warehouses, rather than the characterless misrepresentations of our better life which so many or most of them are. Characterless? Hardly that, for a lie has character, though the borrowed form has not!

I can bring this matter home only by citing individual instances. This I do in no spirit of personal criticism and would hesitate to do at all, but that I feel keenly that the case is parallel to one in which a surgeon is called upon to cut deeply in order to save life.

In viewing the work of today it would seem that about the most brutal utterance of an architectural untruth (and let us hope for the honor of society it is a civic misrepresentation also) is sounded forth in the new Cook county building. Forms expressive of Roman power and official domination were borrowed, transferred to Chicago, magnified and set upon a scaffolding of steel and stone to impress on the citizens an idea of the supreme power and authority residing in the Chicago common council and the Cook county board. This assumption of supreme domination, backed up by brute force, is so purely gratuitous in this age of individualism and of altruism that the builders could not express the idea in any sincerity and made the structure a sham. Pedestals which are a hollow mockery, columns which carry nothing, and a self-supporting entablature which is a farce—the whole thing is the utterance of an unmitigated falsehood.

The most subtle utterance of an architectural untruth (and let us hope for the honor of commerce and industry that it also, is a misrepresentation) is sounded for in the new Gas Building in Chicago. It is called the Peoples (?) Gas building—save the mark! Roman forms most ostentatiously expressive of pomp and power were borrowed, transported to Chicago and introduced into the lower stories of this great commercial building. The columns are not integral with the mass, are set up for a theatrical display and could be removed without disturbing the structure. And, further, the terra cotta cloaking of the overhanging skeleton of steel, simulates granite and is of dimensions disproportionate to the work to be performed were the nobler material really employed. This is the supremest exaggeration of a type of building which is being made to symbolize the commercial spirit of Chicago and of America, and if the type is truly symbolic of our commercial life the nation is as surely doomed as was the Roman Empire, as were the cities of Sodom and Gomorrah. This particular building is most insidious in its appeal because of the richness and brilliance of the design. Other types there are which are pitiable.

In the center of the financial district a bank building is now rising which utters about the most ludicrous architectural untruth sounded forth

in present days. The great polished granite drums of the shaft are "cored" and slipped down over the steel verticals of the structure, while upon the polished surface of the stone are to be pinned ornaments of bronze—all expressive of a crude and pompous disregard of facts absolutely at variance, let us firmly believe, with the character of the commercial life to be carried on within the walls.

I might add to this list the building for the State Educational Bureau, now under construction at Albany. This building, with its untruthful mask, is nearly as brutal as is the first example cited and nearly as ludicrous as is the third, and it is designed to express, at least to house, the highest educational and cultural influence of the Empire State! Is the character of this influence denoted truly? Other examples in Chicago, in New York, in Pittsburg, in San Francisco, in all our great cities, could be cited.

I am not speaking just here of those buildings designed for banks, theaters, schools, factories, etc., which seem to be cut off by the rod from some interminable Roman colonnade and in the building of which the column is used functionally. In my opinion these buildings are stupid, inexpressive of their purpose and of the age, and wanting in imagination. This may be merely a personal opinion, but as to the cases cited there can be but one judgment—they are false. We have no record of such prostitution of art, even in the most debased Roman period. If such examples did exist they were of those accidentals and incidentals which time has so kindly wiped away, and we may safely prophesy the same happy fate for the modern structures.

Are these examples expressions of individual temperament merely, or are they characteristic of a general tendency? If the former, there is need of a rebirth within the individual; if the latter, there is manifestly a widespread decadence which can only presage a not very remote downfall. The excuse presented is that the strenuous urging of circumstances permits the artist no time for reflection and forces him to use the every-day and well-tried formulae. But the real reason is that the age is wanting in the finer sensibilities which crave the art expression having devoted itself to commerce, to science and to constructive altruism. Other commercial ages have felt the art impulse. The truths of science should not overshadow the truths of art, while constructive altruism should be counted on to instill correct principles of life, and even the ordered expression of those principles. A great work is laid down for the teachers of ethics and for the schools of ethics and of aesthetics when they turn from the pedantry of culture and a contemplation of the traditions of the past, to study in all humility and sincerity the nature and application of the laws of truth and beauty.

The true characteristic of our American life seems to be a devotion to the humanities; and the temples we erect to it are the schools, the hospitals, the asylums, the settlement houses, the workshops, the mercantile buildings, the churches, and the homes. Our government buildings should embody the essence of all these. To the artist who rightly apprehends the interrelationship of the intellectuality, the spirituality, and the ideality inhering in these types, there opens up the possibility of leaving the indelible impress of his individuality on the art expression of his time and to adding his increment and its increment to the ultimate expression of his race; but to this end the artist needs the assistance and inspiration of the unconfused utterance of communal and national ideals.

It seems impossible that, with all our background, with all our sources of knowledge and all our opportunities for consistent upward development

we are, as individuals and as a race, devoid of high idealism in art. It seems impossible that these examples I have cited, and which seem to mark a general tendency, are more than superficial trappings which indeed, do not "denote us truly." If they are, then we are in another dark period of history. If we really are, as individuals and as a race, sincere in our idealty, then time will wipe away these manifestations, as accidentals and incidentals, as scaffolds, in more meanings than one, from which we are building the image of our better self, and which, having been builded, shall endure.

Our salvation in art will come when, having proven that we are capable of self-government, that we have conceived, have developed, and can maintain permanently and justly and orderly, a government of the people, by the people, for the people, we realize that this is but one form of our individual expression, and that the social, the ethical, and the aesthetic phases are just as expressive of us and as much a part of us, and just as much to be developed along individual lines as is our governmental form.

* * *

Church of Pure Gothic Design for Oakland, California

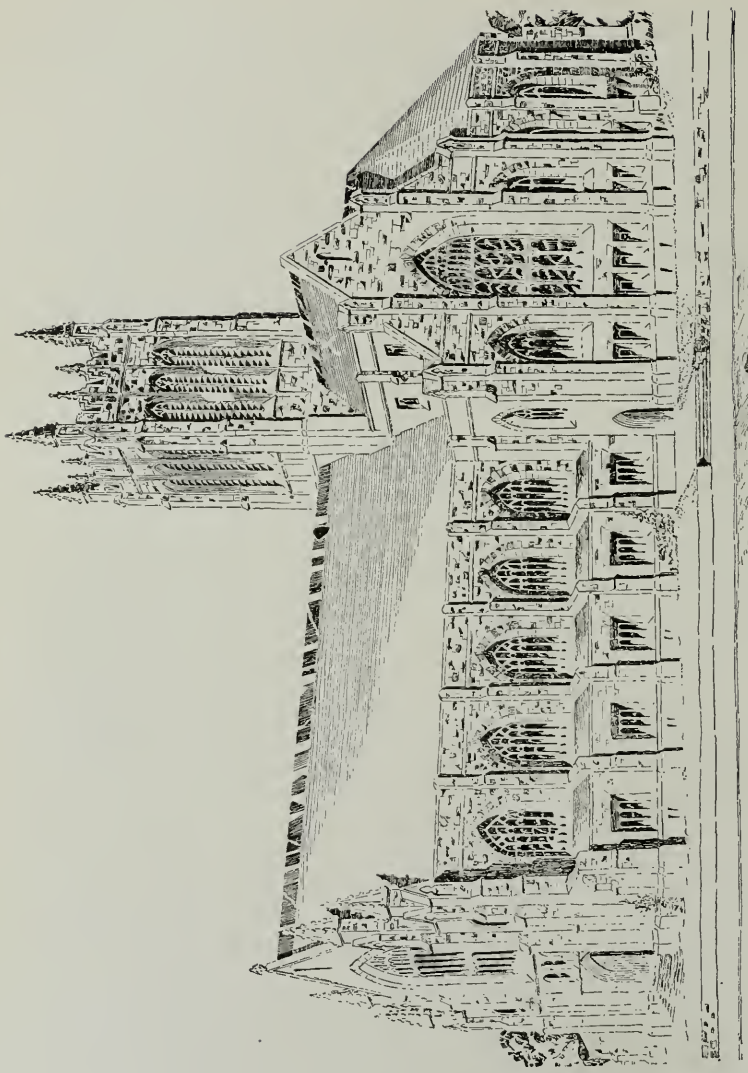
A CHURCH in the purest type of Gothic architecture has been designed by Architects Norman F. Marsh of Los Angeles and Charles W. McCall of Oakland, for the First Methodist Episcopal congregation of Oakland. Preliminary plans have been approved and working drawings will be started as soon as the church is in possession of a clear title to the site which has been purchased. It is the expectation that construction will begin the first of next year.

The proposed edifice is designed in perpendicular Gothic with a cruciform plan, quarters for the Sunday school department being provided in the transcept, with the general auditorium in the nave. So far as is known the cruciform plan has never been carried out in any church for a Protestant congregation except an Episcopalian. The adoption of this plan enables the architect to carry out the Gothic design in all its purity as desired by the Oakland Methodists.

A splendid site for the edifice has been secured with three street frontages, 106 feet on Twenty-fourth, 269 feet on Broadway, 260 feet on Webster and 164 feet in the rear. The structure will set in the middle of the site surrounded by an unbroken green sward. It will be approximately 200 feet in length and 200 feet in width across the transcept and 90 feet across the nave. At the intersection of the nave and transcept will be a tower 30 feet square and 104 feet high.

The general auditorium, with gallery, will have a seating capacity of 1200. In the Sunday school department there will be an auditorium seating 500, and eighteen classrooms. The main floor, or basement, which will have a 12-foot ceiling, will contain a social hall 40 x 60 feet, men's clubroom, women's parlor, reception room, kitchen and rooms for storage and heating plant. The main entrance will be on Twenty-fourth street, and entrances to the Sunday school department on Broadway and Webster street.

The structure will have a steel frame with concrete walls and exterior veneer of cut stone. The roof will be covered with slate. All floors and partitions will be wood. Oak will be used for the interior trim, which will be Gothic in design and treatment. The ceiling of the auditorium, which will be about 35 feet high, will probably be constructed with exposed timbers. All windows will be stained or leaded glass. The edifice will be heated by steam using the indirect radiation system. The estimated cost of the structure is $150,000.



Design for First Methodist Church, Oakland
Norman F. Marsh and Chas. W. McCall, Architects

The Transplanted Italian Villa*

By MELVILLE McPHERSON

A Detail of the Rowayton Villa
Slee & Bryson, Architects, Brooklyn, New York

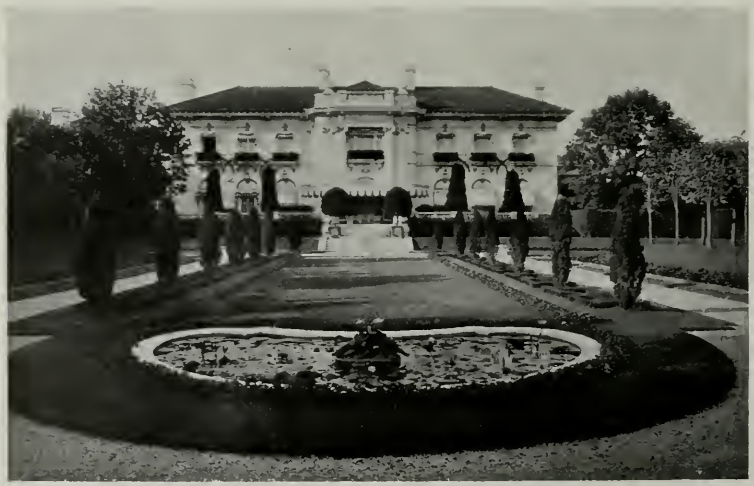
WHEN American cities were young and uncrowded and life in them was comparatively simple, people did not feel a definite need for getting away from it all for a part of each year. But since the cities have grown so big and crowded and life in them so complex and exhausting, the only thing that makes life endurable in them is to get somewhere into the open now and then. Thus we have come gradually to understand the villa of the Roman patrician, the Maison de Plaisance of the French and the English country house. And not only to understand but to appropriate the idea to our own use.

The Italian villa, which was the inspiration of all country houses and still stands as the perfect type, has borne transplanting to the United States uncommonly well. There are many very fine examples of it in various parts of the country, and while they vary in many particulars from the true type, the spirit of it remains, which is the essential thing.

Among the historic villas of Italy there is a wide variety, but underlying them all is one basic principle. The houses may be of the utmost simplicity or extremely baroque in style; there may be what seems to us an absolute poverty of green growing things in the garden, or there may be a semi-tropical luxury of growth, such as characterizes the villas around Lake Maggiore; there may be garden space that seems adequate only for a mere doll's house, or there may be a whole hillside with groves and terraces, but there must be, ever and always, a harmony between the house and its surroundings. This is the art of villa planting. There must be that perfect relation and proportion between the house and its garden and the surrounding landscape that is observed in the proper framing of a picture or the perfect setting of a gem. The villa architect must first study his location and suit his house to it, and must then make the garden harmonize with the lines of the house, the paths and alleys conforming definitely to the principal entrances of the house; the fountains, lily ponds and such shrubs, trees and flowers as there may be placed in accordance with the general scheme, which, though exact and, perhaps, obvious in its conventionality, must never for a moment suggest a geometric problem done in greenery and gravel.

*From Building Progress for September.

The Italian Villa Takes Kindly to American Soil. An example at Rowayton, Connecticut
Slee & Bryson, Architects



The Jacobs Villa, at Newport, of the Formal Italian Type. J. Russell Pope, New York, Architect

The house should never dominate the scene, and, no matter how limited the space, the villa architect who has the true feeling will always contrive some little surprises—a charming vista from the doorway, effects of disance or an apparently accidental disclosure of any particularly beautiful feature of the landscape at some point in the garden. And if he would observe the last letter in the law of villa architecture the whole must be enclosed by wall or hedge or some formal lines which give a sense of shutting out the busy world and its cares and leaving one to rest and repose.

Here and there architects have introduced the type of the Italian villa into city residences, and while it adapts itself quite readily to this use where there is a block or so of ground—many villas in Italy having but limited garden space—this is a perversion of the original purpose.

In its original sense the villa was the country residence of the city man. It was usually designed for summer use, though many Roman patricians maintained villas in various places for different seasons. The ancient Romans were country lovers, and the Italian villa was an expression of this love—an expression to which the patricians gave vent as soon as their civilization had reached a point where they could feel safe outside the fortified walls of a city. The present-day city-bred American has turned to the country as a saving grace, and whether he may be classed as a true country lover or not, he is more and more adopting the villa mode of life, with his winters in the city and his summers in the country.

Many ancient villas were built on a very large scale and in three parts. The villa urbana comprised the house and pleasure grounds of the owner. The villa rusticana contained the buildings and grounds of the servants, farmers, cattle and other stock. The fructeria, or agricultural department, provided the food supply of the entire establishment, which was quite self-supporting.

By far more numerous, however, were the villas which pretended nothing beyond the villa urbana, and depended for supplies upon Rome or the nearest town. This is the sort that we find transplanted to American soil and taking kindly to it.

It has been said that the Italian villa is a negation of nature, and it might be added that it is an affirmation of art and the artificial. In its purity the Italian villa knew no lawns, no natural growth of tree or shrubbery, no flower beds. The grounds were strictly formal in character, with gravel paths, alleys and roads, unplanted parterres, few flowers, if any, no deciduous trees or shrubs. For greenery they used the cypress, pine, laurel, ilex and other evergreens, which were usually clipped in conventional forms, now as borders, again as niches or mazes or pleached bowers or alleys. No effort was made to hide the hand of the artist, nor was the art and artificiality distasteful to the patricians. Nowadays there is some question whether there is more of charm for the city weary in a garden of formal beauty or one where nature is allowed her own way.

In Italy the artist's hand was evident, also, in the architecture, and sculpture played an important part. This suited the formal garden so long as a nice sense of proportion was maintained, but a tendency to allow the architectural features to dominate the garden marked the decadence of the formal villa. Then came the barbarian hordes into Italy, and of the ancient villas only a few fragments remain. During the Renaissance the villa appeared again on the same lines as the old ones, and the style with variations found its way to France and England and later to us.

Many changes occurred in the transplanting to other European countries. Villas became in France and England permanent residences, grounds

The Italian Villa as Found in California has no Counterpart in Italy

were extended out of all proportion, and the landscape gardener began to work at cross purposes with the architect. Formal villas lost caste. Meanwhile there had been another invasion of Italy by barbarians, this time inartistic Britishers, who bought up the Renaissance villas and "improved"

A California Villa which shows House and Garden and Surrounding Country in Perfect Harmony

them, sodding the parterres and cutting them with paths and flower beds, trimming away the pleached alleys and grottoes, transplanting the lemon trees from their earthen vases into the ground. The Italian villas one sees today in Italy are a sort of modified British edition.

In America the Italian villa has also undergone changes. Here there is a greater freedom, perhaps, though not less of beauty, so long as the spirit of harmony between house and garden prevails. Some builders have made the mistake of thinking they have achieved an Italian villa when they have built a stucco house on two or three town lots, and have scattered over the lawn some bits of cheap Italian statuary, a few cracked urns and, perhaps, a marble bench from an old Italian garden. These have some of the letters but none of the spirit of the classic villa.

But within a decade or so there have been built some very charming Italian villas, which have all of the spirit if not all the letters of the villa law.

When Americans first fled from the overcrowded cities to the country they wanted to get away from everything conventional. So our first country houses were not Italian. Grounds were left as nearly natural in their irregularities as possible, few trees were sacrificed, and there was plenty of grass left to grow as it would. "Back to nature" was the shibboleth of weary city dwellers, and it is still with many of them.

But there is a constantly growing number who can find rest and delight in the more artful form of country house, and on Long Island, at Newport, in Connecticut and Massachusetts one comes not infrequently upon charming Italian villas, where busy New Yorkers and Bostonians hide from their cares and enjoy art and nature in conjunction. And elsewhere in the country, within fairly easy reach of other big cities, are other villas of this type, which is becoming more and more the expression of cultured taste.

For the most part the houses are of cement, stucco or plaster, any of the materials suggestive of Italian structure, and the increasing popularity and practicability of these materials may have something to do with the increasing popularity of this style of architecture. The house may be simple or pretentious according to the purse and predilection of the owner, but no villa architect with the true ideal will allow his house to dominate the surroundings. If money must be spent, he will spend it where it will not stand out as so many dollar marks spattered over the outside walls, and he will not spend it all on the house, leaving the grounds to take care of themselves.

The use of evergreen trees and shrubs, characteristic of the classic villas, has an added value in those parts of the United States where winter is wont to strip the country of all its greenery. A garden with evergreens is not so bleak in winter, and such a villa offers itself as a vacation place in the midwinter as well as the midsummer holidays.

Partly for this reason the Italian villa has remained more truly Italian in the East than in California, where one would naturally expect to find the truer counterpart. California is often likened to Italy, but as a matter of fact in California nature is so insistently luxuriant, with any small encouragement from man, that no one has the heart to deny her even for the sake of a truly Italian villa.

Of course, in California the Spanish style of architecture is the prevalent note in both town and country, but there are a few villas which are essentially Italian in their charm of vista, harmony of house and garden—everything, in fact, but the negation of nature. The Italian cypresses, in

The Gillespie Villa, at Montecito, near Santa Barbara, California
Cram, Goodhue & Ferguson, New York, Architects *Myron Hunt, Los Angeles, Supervising Architect*

rows of military regularity, lose something of their formality when screened by the portiere boughs of a pepper tree, the clipped edge is less austere with a rose vine clambering over it, and orange and lemon trees won't stay dwarfed enough for earthen vases. Altogether the Italian villa as found in California has no exact counterpart in Italy, unless it be in the lake regions where nature seems less nigardly than farther south. Perhaps it was because nature was loth to give that the ancient Romans resorted to art in the construction of their villas.

One of the most interesting country places in California is the Gillespie villa at Montecito, near Santa Barbara. While it varies widely in many respects, perhaps none other in this country has been conceived more truly in the spirit of the ancient Italian villas. The site was selected twenty-five years ago because of its wonderful possibilities. Then the plans for a house were made by the owner and a college mate, well known in the architectural profession. The plans were fitted to the site, and perhaps some foundations laid, but nothing more was done until things were planted where they would be most effective and given time to grow up in their places. Then the terraces were laid out and completed, and lily ponds and canals of running water, and all in its own good time came the house of simple Greek outline, but so perfectly placed and surrounded that a week or a month is all too short to appreciate the charm of it. The villa is not yet complete, nor ever will be, as the owner rarely visits it without making some slight change or addition—a fountain here, a seat there where a vista may be enjoyed at leisure or a new path through the groves of rare trees. Italy, Greece, Persia and other lands have given their mite of suggestion toward an ensemble that would make one of those ancient Roman patricians apoplectic with envy.

The growing tendency toward villa life in America may develop new ideas in villa design, but always there will be many content with the beauties of the Italian type. And not the least desirable feature of it is that it is particularly well adapted to fireproofing—a feature of inestimable value for country houses, which are practically without fire protection.

Acoustics

MR. H. H. STATHAM, writing on the subject of "Buildings for Music" in The Architects and Builders Journal, says: "Acoustic effect is a most elusive problem; buildings which ought not, theoretically, to be good for sound sometimes proving unexpectedly satisfactory, while those over which great pains have been taken turn out failures. But one general principle is undeniable: It should be the object of a concert room to assist sound at its point of production, and to prevent any reflection or reduplication of it by echo when it has once been produced. In the construction of the orchestra and its surroundings nothing is so suitable as wood. Hard substances on the walls will drive sound forward, but will give it a harsh, clanging effect. Textiles, on the other hand, drink up the sound without vibrating it; there should therefore be no curtains or such things anywhere about the orchestra. In the auditorium they may sometimes be useful in choking an echo, but this is only when the building is wrong to begin with. Fibrous plaster is a good material for lining the walls of the auditorium; it acts in sympathy with sound without producing much echo. As a general rule, all substances which give sharp reflections of light will give sharp reflections of sound; polished marble and other such materials are therefore misplaced in a concert room. Plate-glass windows are equally bad; they send sharp echoes back; windows should be broken up into small panes with wooden bars. Then shape has to be considered as well as material. As a general rule, concave surfaces are bad, either in plan or section; they tend to focus echo. The two best rooms I can remember for hearing music were the old Exeter Hall, a wide parallelogram with the seats going up in a slope from front to back (the plan adopted also by Wagner in his Bayreuth theater), and the Liverpool Philharmonic Hall, also a parallelogram, with a flat floor, and a flat ceiling with a cant at the walls, and the surface broken up by cross-rib pattern in relief. * * * "

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Seeing the Architect

NO doubt it is perplexing for a young city man unacquainted with the suburbs in his search for a home to know just where to go and whether to build or buy. The ready-built house offered on an easy payment plan has a strong attraction for a fellow who can't quite see his way clear to buying a couple of acres and having a house built for him when he is so situated as to be unable to give the personal oversight to the construction which he thinks indispensable.

In most cases he treats the matter too seriously, and is more suspicious of his fellow-man than he has any reason to be, as altogether too many "warnings" are printed for the edification of homeseekers in the fireside weeklies. Reasonable judgment and a careful avoidance of over-much enthusiasm will carry one through a building or buying campaign as safely as through any other business deal. If you decide to buy, send an architect or builder to examine the house before you sign a contract, to see what quality of material went into its construction, if there are places left where the wind will whistle through next winter, if the kitchen is too small, the veranda and pergola unstable or the foundations too meager to be perfectly secure. In the majority of cases the construction will be found all right, but it is a satisfaction to be sure of it, and whether you buy or build an architect's help is worth far more than his fee.—New York Record and Guide.

Mr. Edward R. Bennett

The Man Who Will Formulate General Plan of World's Exposition

AS stated in the October Architect and Engineer, President Chas. C. Moore has appointed Edward R. Bennett to take up the study of the general plan of the Panama-Pacific Exposition with the Executive Architectural Council composed of Messrs. Polk, Ward and Faville. Bennett is practically a Californian, having arrived in this port on one of his father's ships in 1886. He spent several years here and worked for a number of San Francisco architects. He won a Phoebe Hearst scholarship to Paris and was one of the first holders of that honor.

Bennett's career at the Ecole des Beaux Arts at once attracted attention, and after graduation with honors, he was immediately taken into George B. Post's office in New York. Post was one of the original Chicago Exposition architects, and is the dean of the New York architects.

Shortly afterwards, D. H. Burnham's attention was directed to Bennett, and at his earnest request, Post let Bennett go to Chicago, where he took up the city plan work with Burnham. He also worke don the plan of the city of Washington, then on the so-called Burnham plan of San Francisco, and later on the plans of Minneapolis, Portland, and Cleveland.

Speaking of Mr. Bennett's work, Willis Polk, a member of the Architectural Commission, expressed the opinion that Bennett is the most highly trained man in the world for the particular work he has been engaged to perform—the formulation of the general plan of the Exposition.

Bennett already has his plans well formulated and he is enthusiastic over the work.

"In the building of a great international exposition," he says, "the first thing after the selection of a site is to so plan that site as to bring out its greatest architectural possibilities, and this with due regard to its surroundings.

"As you stand in Harbor View, you get a magnificent picture of the wonderful stretch of water in the harbor, and you note the hills beyond. It is as fine a view as any in the world. I allude to the view you get when looking toward Mount Tamalpais, with Alcatraz in the foreground. This is an effect that will be utilized. There are many other effects to be gained from the Harbor View site, and the park site also offer splendid views of the ocean and bay. These tell their own story. The story must be compelling, and, in addition to its architectural possibilities, this great body of water at Harbor View offers wonderful possibilities for boat life, provided we can sufficiently protect it and get a body of still water that can be utilized for all the attractive events of life on the water, which should go with an exposition.

"Let me emphasize that the planning of a fair of this kind requires careful manipulation. It is planned in units. First comes the analysis of the grounds, what is the part best adapted for the nucleus, by which I mean, in a general way, the radiating center; what part of the ground is best adapted for the agricultural possibilities, gardens, landscape effects, etc.; what part of that site is best adapted for the concessions; how can the people be most easily transported to the grounds; where can the freight be best landed.

"The architects have to consider the question of economics. The question is, where can the fair be built the cheapest—in this place or that place? I do not mean we want to build the fair in a cheap place, but I mean, with everything being equal, where will be the place which will give the maximum effect at the smallest cost.

San Francisco Looking Into the Future of the Pacific.
Model by Edgar Walter, Sculptor, and G. Albert Lansburgh, Architect

"When we get one unit thought out we may find that it conflicts with another unit. Our plan regarding the buildings might not lend itself to the plan regarding landscape effects, and, when these have been thought out, they may have to be changed to conform to the transportation problem. It is for these, and many similar reasons, that great time is consumed in the planning of the exposition grounds and buildings."

E. W. Allen of San Jose has suggested to the committee on concessions that a canal two miles long be excavated on the Harbor View site and two miniature locks, duplicates of those at the Panama Canal, be built. He suggests that along both sides of the canal the committee locate the amusements and call it the "Tow Path."

* * *

San Francisco Looking Into the Future of the Pacific

THIS model, by Edgar Walter, sculptor, and G. Albert Lansburgh, architect, and which formed one of the main features of the Taft banquet decorations by Mr. Lansburgh, has been suggested for the proposed colossal figure to be erected at Land's End, or at some point thereabouts, overlooking the Pacific.

The figure itself, if executed, would be 100 feet high. In the base, the frieze represents the industries which this future of the Pacific is bound to develop in the State of California. The two pavilions flanking the central portion of the base, surmounted at the corners with four prows, with their maritime character, are suggestive of the future development of the merchant marine.

In handling the figure, Mr. Walter has assiduously avoided the banal, and has, in fact, gotten away from the classic treatment. His figure is a live modern creation different from those proverbial torchlight statues from the days of the Colossus that bestrode the Rhodean passage down to the Bartholdi torchlight of liberty.

It is the intention of the artists that this figure be illuminated by four spotlights concealed in the prows at the corners of the base, so that, in the night, the incoming ships will see an illuminated figure instead of a single light.

The entrances to the pavilions at the base are from either end, and on the rear, corresponding with the frieze of industries, is a frieze of the great men of the Pacific Coast.

* * *

Bungalows in Cold Climates

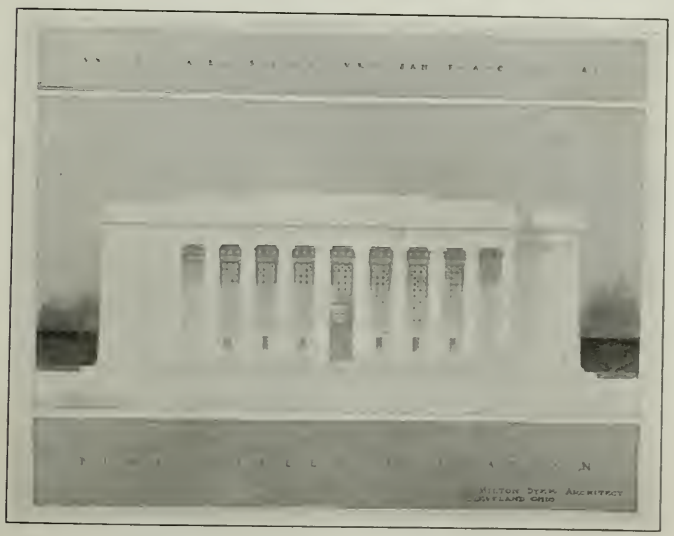
THERE is no reason why the California bungalow is not perfectly adapted to all the needs of the people in colder climates. An architect whose experience covers a long period believes that unquestionably the bungalow style is entirely satisfactory wherever it is built.

The fact that the bungalow in America has found its most diverse development in Southern California naturally leads many to think that bungalow homes, while all right for the warm climate of the State of the Golden Gate, would not be suitable as winter homes in the North and East. This is undoubtedly a mistaken idea. It is true that California bungalows as built in California would never keep out the cold when the thermometer registers zero during the cold snaps, but the idea to be emphasized is that California bungalows with certain minor differences in construction can be and have been made to fill every requirement in the coldest parts of the country. Floors should be made double with a layer of paper between, walls sheathed solid and covered with building paper (and in some cases back-plastered or in some other way two dead-air spaces made), all joints made close and window frames tightly fitted.

Scottish Rite Temple, San Francisco
O'Brien & Werner, Architects

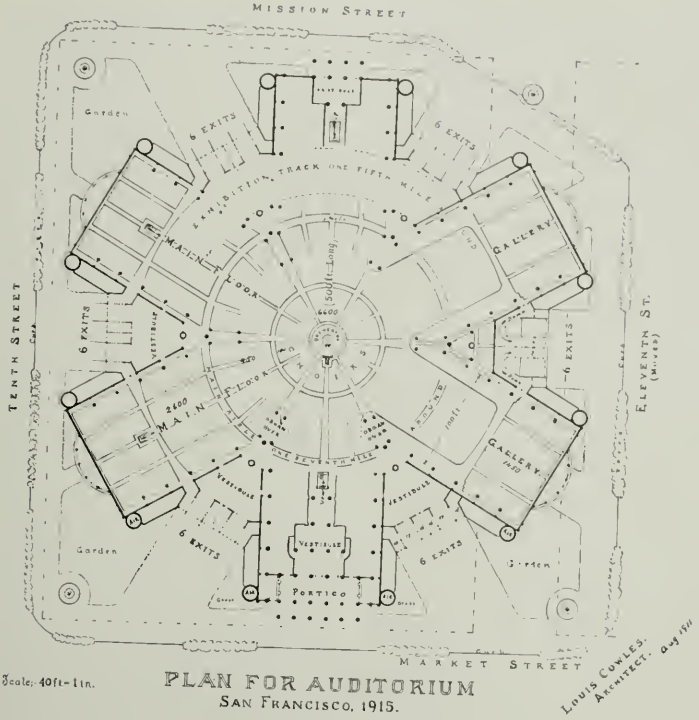
Sorority House Berkeley, California
J. C. Newsome, Architect

Building for the Crim Estate, San Francisco — *Crim & Scott, Architects*



Successful Competitive Plan for United States Sub-Treasury Building, San Francisco
J. Milton Dyer, Architect

Attractive Plan for Group of Three Buildings, Mission Style, for the King City High School
William H. Weeks, Architect



Radial Auditorium Suggested for San Francisco

THE above plan for a Radial Auditorium for San Francisco, as suggested by Architect Cowles, was inadvertently omitted from the October Architect and Engineer. Some of the advantages suggested by the author are as follows:

1. It holds an immense audience under short span trusses; hence it is much less costly to build for a given large number.

2. The center part can be built first and so used for a time and will look well.

3. Six wings can be added later, one or more at a time as wanted, and look well, if properly managed.

4. Any number of wings can be curtained off, so reducing the size to suit smaller audiences of various numbers.

5. The building should have great unusual beauty it is unique.

6. Besides the grand main entrance there are forty-two liberal exits, all short, direct, easy, safe and have inclined floors in place of stairs, even from the galleries.

7. The main aisle is a circle one-seventh of a mile around.

8. By removing certain seats and light partitions, an exhibition track is available (for horse shows, etc.), forty-five feet wide and one-fifth mile around. It is readily adaptable to exhibitions of various kinds.

9. There are numerous spaces well adapted to show "Home Industry" goods, permanently.

10. In ends of wings—first story—under where main seating runs up high (to give all seats a clear view of the stage), there are fine places for a large, unique restaurant, a picture theater and various stores, shops and offices, besides numerous storage spaces, etc.

The William H. Crocker Mansion, San Mateo County, California

Louis H. Hobart, Architect

Design

By F. W. FITZPATRICK.

YES, there is good design and bad design, the artistic and the ugly. And that differentiation is not limited to things important and big and that we generally associate with Art, but distinguishes the most humble, aye, the trifling detail. You expect "design" in a fine lady's ball gown, or in a grand monumental building; you hardly look for it in a coal scuttle or a telegraph pole. Yet there are attractive, yes beautiful coal scuttles and ugly, repellant coal scuttles, and ditto telegraph poles. To have either one of these attractive and beautiful it is not necessary to make them elaborate, costly, extraordinary or unserviceable. Indeed, the more thoroughly utilitarian they and all other things that may be designed are and appear to be, the better. The great scheme is to make them beautiful in their serviceability. But now, really, what constitutes beauty? What is beauty, and how may we set about defining "design" in so far as its generally accepted meaning is concerned? One speaks of designing a motor or a suction pump. I am not referring to that species of design, the application of mechanical sciences, the reference or relation of one working part of a machine, for instance, to another, but rather do I refer to the term in its application to the clothing of a mechanical or other skeleton, the garbing of matter generally, the finishing touches we may put upon most anything after the essentials for its purpose are provided.

You can't get away from the fact that in considering "design" in that light or, for that matter, anything else artistic, your or my judgment is altogether a matter of personal preference. Even if our training and prejudices and usual environment are much the same, we may differ radically in our judgment as to what is and what is not artistic, good design, and both be perfectly justified, for there are no hard and fast rules, few controlling precedents and nothing but the most fundamental, elementary basic principles upon which to work.

At law everything is rule and precedent. If Judge Smith said, sixty years ago such and such was the proper caper, he based his opinion of the rights in a comparatively new situation upon what had been decided forty years before anent something that at least remotely resembled that case. And every judge since then has founded his finding, his opinion upon the precedent established by the aforesaid Judge Smith. And it has become law and has been written so. Law is easy. You just dig until you find enough rulings that fit your case, and whether you're right or wrong—equity be hanged!—if the other lawyer hasn't found sufficient rulings to counterbalance the results of your research, why, you're all right.

Not so in the field artistic, in Design. Pick out any three men as judges in the matter of a design for a building, a dress, a stage scene, anything artified. Suppose they are able, bright, scholarly men and of

about equal attainments and that they go at the matter with equal enthusiasm and interest. The chances are about one in a thousand that they'll agree even upon the mayor, the salient points. Personal preference, different points of view, temperament, all those things cut so much figure. Practically, there is no such thing as scientific art criticism. Even one's digestion cuts a figure. What will please you today may, on account of some freak of that digestive apparatus, seem all upside down to you tomorrow, and call forth anathema from you.

There are some cardinal principles upon which all cultivated people agree, but they are few indeed. In dress, for example, a man who'd wear a red necktie or tan shoes in evening dress, or a diamond pin in a négligé shirt, or a woman who'd affect a beplumed opera hat with a boating suit, any and all of these would be set outside the pale by all people who had any idea as to what was what. There are thousands, of course, who would applaud any such combination. They don't know differently, they are the untutored, the "proletariat," to whom the possession of a diamond or an opera hat would seem quite sufficient excuse and justification to trot it out upon any and all occasions. But to say that they do not count, that their opinions and likes and dislikes are of no consequence is a sad error indeed. It should be the aim of every cultivated, artistic, trained man to help reform the depraved, so-called popular taste, to do everything so daintily, so well that that rude public will by and by appreciate the really artistic. Show that public nice things, good things, accustom it to their use and you'll find that same public a far more apt pupil than you imagine. The power of suggestion is great. Do with the artistic as Jacob of old did with the speckled rods!

Our newspapers and our playwrights, it seems to me, have taken the wrong tack. They dwell upon the sensational, the crude, they pander to a depraved taste they call popular, and aver that it is because that taste demands those things that they give them to the public. I believe that they have cultivated that taste, encouraged it, yes almost created it, and now it is but a natural consequence that since the popular appetite has been fed that kind of pabulum it should clamor for more and even more highly seasoned provender of that nature. But even at this late date, I am sure that if the papers and the theaters worked in harmony and with that object well in mind they are potent enough to effect the Renaissance of the decent, the true and the noble in popular taste, and it would not be long before that taste would demand just that sort of thing and not tolerate anything that was otherwise. An appalling load of responsibility rests upon the shoulders of these great molders of popular opinion, popular taste, these men who virtually make the morals of the nation, and they are recreant to their trust indeed when they deliberately and for a few filthy dollars set to work to deprave either!

And an almost equally grave responsibility rests upon our shoulders, the men who profess to do artistic things, the designers, the architects, the painters, the musicians, the makers of fashions, all who are supposed to "design." Naturally the public looks to us as leaders. Are we so in the right sense, or are we just pot-boiling hacks?

Probably I will be classed with the inconoclasts or with those beyond the pale, the heterodox, for not right here and now clamoring for an abject following of this or that school of design, this or that hide-bound scheme of design, the much worshiped regular, the accepted, the orthodox. Our architects, and in fact all our artistic people, sin, methinks, in that direction, the worship of the fad, the apeing of something of other times and climes,

and that is forced into commission for all purposes and at all times because, forsooth, some one they thought in authority said it was the proper caper. They have become copyists, they have choked originality, they have made cultivation subservient and secondary to mere schooling, learning certain set phrases by rote. In architecture everything has to be classic. It is inappropriate in most modern buildings, it is untruthful in construction—according to modern and necessary methods—but it's the thing to do. No man can go into greater rapture over a noble old Greek temple in its own settings than can I, but, ye gods, it makes me champ the bit to see a modern interpretation of that same Greek temple cocked on a twenty-foot lot, in a busy street, doing duty as a real estate office or a tailor's shop. And so it is with all the other arts. The schooling miscarries. It is intended to bring out what is good in the individual, to incite, to aid what there may be of genius, while in reality it stifles, stunts and destroys what little there may have been originally. Take in music, for instance. How many youngsters do you know who really had music in them, but had it all beaten out with over-training, misdirected, schooling? It may be a depraved taste, but I enjoy playing or singing by one who does it "by ear" alone. There is more chance of getting melody, real music out of him. Your school product aims only at the top-notch, it becomes mere technique, it is strained, it may be correct, but I'm hanged if it's agreeable or pleasing; there's nothing spontaneous about it, it's but a lot of technical fireworks, musical acrobatic feats. So in painting, why all the fuss as to whether a picture be of the impressionist school, preraphaelite, or Jim Jones' following? Why squabble over the technique? If it tells a story well, if it looks like what the thing it portrays seems to us, if it appears real, what the mischief does it matter whether it be done with a knife, or that the artist put the color on with a shotgun or a camel's hair brush or in the manner the great Tom, Dick or Harry may have decreed it should be done? It's like the Government work. The purpose is forgotten in the means of securing the end. It matters really little about the account that is to be paid, for example, so long as the red tape part, the filling, the auditing is right up to Hoyle. It costs more to supply the frills about the doing of the work than does the work itself. And that's the tendency of our present day schooling, faddism, fooling away our time with the husks and the chaff and paying scant attention to the grain.

In design, and it enters into well nigh everything we do, fads and especial schools, should be relegated to their proper place, a very secondary place, and, it seems to me the real principles should be taken out of the cupboard where they have been hidden; they should be well dusted and conspicuously placed where all of us who "design" should see them constantly.

Let us study well the purpose for which a design is made, let it be a building, a dress, a chair, a street car, let us first and foremost accomplish the purpose the thing is for, in the most direct, simple and effective manner possible—that will be one of its chiefest charms and consequent beauty; never, under any circumstances, let us sacrifice one whit of that directness, real utility and fundamental purpose to what we may mistakenly deem art. Then if there be money to adorn that purpose let us do it with grace, sobriety and refinement. Let the adornment emphasize and accentuate the purpose of the thing; never let us try to befuddle the people into thinking that that which is under the adornment is other than it really is. Far be it from us to ever force an issue, as it were, create a condition merely as a conveyance, a medium for the "artistic" in our design. Let us

saturate ourselves with beauty at our schools or elsewhere, but chiefly in observing nature, beautiful scenery, graceful animals, the glorious coloring of a sunset or a storm, and let us as carefully cultivate all that is within us of refinement. Let that decoration be appropriate. Supposing a dress; let it be as flouncy and brilliant and gorgeous and rich as the occasion warrants and the wearer can stand, but let it be a dress and show its lines of construction, let it be draped with all the artistry at one's command, but let that drapery appear natural, logical, as if the gown were really draped from the shoulders or the hips. It's the unnatural, the forced, I rail against, the dress that seems to have been applied, gotten into through some special dispensation of a too complacent Providence. I don't mind the hats that are the vogue today, the soup-bowl affairs of felt or of fur. So long as the bottom edge is turned up into some semblance of the rim of what has ordinarily passed for a hat, you may beat it and dent it and kick it into however rowdyish and hoydenish a shape you wish and stick a feather in it just as rakishly as you wish. But I do growl when you cut that rim into impossible shapes, fasten it on with rivets and angle-iron where the top ought to be and attempt the rakishness by such dents and forced effects as you could naturally expect us to accomplish only with a triphammer on boiler-plate.

Be natural, logical, direct, refined and sane and your design, whatever it is, will be beautiful.

* * *

A Code of Ethics and Schedule of Fees for Consulting Engineers

THE American Institute of Consulting Engineers of New York has recently completed a code of ethics and schedule of fees for consulting engineers. This code, which was formulated by a committee consisting of John F. Wallace (chairman), H. W. Hodge, L. B. Stillwell, F. A. Molitor, and Prof. George F. Swain has been adopted by a vote of the society. A copy of the code is given herewith:

Code of Professional Ethics.

It shall be considered unprofessional and inconsistent with honorable and dignified bearing for any member of the American Institute of Consulting Engineers:

(1) To act for his clients in professional matters otherwise than in a strictly fiduciary manner or to accept any other remuneration than his direct charges for services renderd his clients, except as provided in Clause 4.

(2) To accept any trade commissions, discounts, allowances, or any indirect profit or consideration in connection with any work which he is engaged to design or to superintend, to in connection with any professional business which may be entrusted to him.

(3) To neglect informing his clients of any business connections, interests or circumstances which may be deemed as influencing his judgment or the quality of his services to his clients.

(4) To receive, directly or indirectly, any royalty, gratuity or commission on any patented or protected article or process used in work upon which he is retained by his clients, unless and until receipt of such royalty, gratuity or commission has been authorized in writing by his clients.

(5) To offer commissions or otherwise improperly solicit professional work either directly or by an agent.

(6) To attempt to injure falsely or maliciously, directly or indirectly, the professional reputation, prospects or business of a fellow engineer.

(7) To accept employment by a client while the claim for compensation or damages, or both, of a fellow engineer previously employed by the same client and

whose employment has been terminated, remains unsatisfied or until such claim has been referred to arbitration or issue has been joined at law or unless the engineer previously employed has neglected to press his claim legally.

(8) To attempt to supplant a fellow engineer after definite steps have been taken towards his employment.

(9) To compete with a fellow engineer for employment on the basis of professional charges by reducing his usual charges and attempting to underbid after being informed of the charges named by his competitor.

(10) To accept any engagement to review the work of a fellow engineer for the same client, except with the knowledge or consent of such engineer or unless the connection of such engineer with the work has been terminated

Schedule of Fees.

As a general guide in determining fees for professional services, the American Institute of Consulting Engineers recognizes the propriety of charging: A per diem rate; a fixed sum; or a percentage on the cost of work, as follows:

Per Diem Rate—(1) Charges for consultations, reports and opinions should vary according to the character, magnitude and importance of the work or subject involved and according to the experience and reputation of the individual engineer, from $100 per day to a higher figure, and in addition where expert testimony is required or where otherwise conditions warrant so doing, a retainer varying from $250 to $1000 and upwards. An additional charge should be made for all actual expenses, such as traveling and general office expenses and field assistants and materials, with a suitable allowance for indeterminate items. In such cases six hours of actual work should be considered one day, except that while absent from the home city each day of twenty-four hours or part thereof should be considered one day, irrespective of the actual hours of time devoted to the case.

Fixed Sum—(2) A fixed total sum for above mentioned services may be agreed on in lieu of per diem charges. A fixed sum may also be charged for a portion or all of the items of preliminary surveys, studies, examinations, reports, detail plans, specifications and supervision, including all of the expenses above recited under per diem rate.

Percentages on the Cost of Work—(3) For preliminary surveys, studies and report on original project, or for examination and report on project prepared by another engineer, including in both cases all expenses of every nature, except those that may be specifically omitted by agreement—from 1½ per cent to 3 per cent on the estimated cost of the work.

(4) For the preliminary stage (3) and in addition thereto detail plans and specifications for construction, including all expenses of every nature except those that may be specifically omitted by agreement—from 2½ per cent to 5 per cent on the estimated cost of the work.

(5) For the preliminary and middle stages (3 and 4) and in addition thereto general supervision during construction, including all expenses of every nature, except those that may be specifically omitted by agreement—5 per cent, but more for work costing comparatively small amounts, and from 4 per cent to 5 per cent where the amount involved is considerable.

(6) For full professional services (3, 4 and 5) and management, including the awarding of contracts, and including all expenses of every nature, except those that may be specifically omitted by agreement, 10 per cent; but more for work costing comparatively small amounts, and 6 per cent to 10 per cent where the amount involved is considerable.

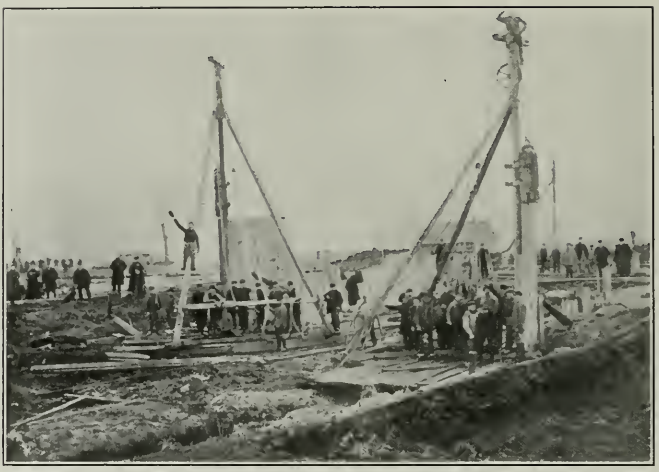
(7) When desired, the percentage basis may be adopted for one or more stages, supplemented by a daily or monthly charge or fixed sum for the remaining stage or stages.

General Provisions—(8) The period of time should be designated during which the agreed percentages and daily or monthly charges or fixed sum shall apply and beyond which period an additional charge shall be made.

(9) The percentages are to be computed on the entire cost of the completed work or upon the estimated cost, pending execution or completion.

(10) Payments shall be made to the engineer from time to time in proportion to the amount of work done.

(11) When alterations or additions are made to contracts, drawings or specifications, or when services are required in connection with negotiations, legal proceedings, failure of contractors, franchises or right-of-way, a charge, based upon the time and trouble involved, shall be made in addition to the percentage fee agreed upon.



The Old Method of Driving Piles by Hand-Power

The New Way of Driving Piles With "Dummy" Steam Engine

The Old and the New Way

THE accompanying photographs furnish an interesting comparison of the old and new method of driving piles for building construction. The first cut shows two piledrivers at work on the foundations of a government building in Prussia in 1876. The two drivers shown in the illustration were operated by hand, about twenty men being employed on each machine. The best time made with these old hand affairs was one or two piles a day. The modern method of piledriving is shown in the bottom illustration. This driver is operated by an engine, and requires the services of but one or two men. The scene of the work is the northwest corner of Battery and Halleck streets, San Francisco, where a new building for the Eastman Kodak Company is under construction. With this machine a pile a minute is easily driven. Another interesting fact in connection with the two photographs is that Mr. A. Wegner was superintendent of construction of both jobs.

* * *

Failure of the Bayless Dam at Austin, Pa.

FACTS determining the cause of the Bayless dam failure at Austin, Pa., are coming to light, and it appears that some very bad engineering work was responsible, in a measure at least, for the disastrous break.

The Bayless dam, used to secure water power for the Bayless Pulp and Paper Company, broke September 30, and in the resulting rush of water many lives were lost and property valued at $5,000,000 destroyed. The dam was built in 1909. It contained 15,780 cubic yards of concrete. There were 7925 yards of excavation in foundations and 6360 cubic yards of embankment, costing, exclusive of engineering, $71,821.48. The dam was 350 feet long and 42 feet high. When completed there was one small vertical crack 51.3 feet to the right of the spillway. This crack extended from the top of the ground level and was about one-sixteenth of an inch wide. Later another crack showed up, 39.5 feet to the east of the spillway. This crack was similar in all respects to the other crack and appeared to be due to a contraction, as there was no evidence of a settlement. They could not have been the result of water pressure, because up to this time there had been no water in the dam.

During the week of January 17, 1910, the weather grew warm and some rain fell. The heavy snows of the preceding month were rapidly melting, and within three days the dam filled to overflowing, which it was doing on Saturday, January 21st. On Sunday afternoon a large slice of the earth forming the eastern hill below the dam dropped down some eight feet and partially slid into the valley, and some water came down under the slide, which was evidently coming from behind the dam. Water in large quantities began comnig up through the ground from fifteen to fifty feet downstream from the toe of the dam, showing that the water had gotten under the dam, through the embankment, and through the rock strata.

In the opinion of T. Chalkey Hatton, civil engineer of Wilmington, Del., designer of the dam, the failure of the dam to withstand the flood of last January was due to two causes. One of these is that the great bulk of concrete which had been hurriedly built, some during the freezing weather, and which had been completed about six weeks before the maximum pressure came upon it, had not set so as to attain its ultimate tensile strength. The most important cause, however, was the water getting under the dam. This condition was not anticipated when building the

dam, and all precautions that seemed to be necessary at the time were taken against it.

H. P. Ramey, engineer connected for some time with the Chicago Drainage District, was commissioned by Rock Products to make a full examination of the evidence relating to the failure of this dam, and he presented the following report:

The failure of the Bayless dam on September 30, 1911, is another one of the instances where an effort is made to lock the stable door after the horse is stolen.

This happening may be used by the foes of concrete as an argument against the use of concrete, but even a hasty investigation into the causes leading up to this failure will show that such an argument is absurd. All failures of concrete structures can usually be traced to one of three things—faulty design, construction or foundations—and in most cases the latter cause is the fault, because the other two can be more easily taken care of. In a concrete dam built on rock every detail of the design can be checked, every part of the construction can be carefully inspected, but it is a hard job to find out as much about the rock upon which it is built. The rock is usually porous, usually stratified, and in nine cases out of ten has between its layers a stratum of impurities, clay, shale or something similar, which prevents it from being as good as what is built upon it. Extensive borings even may not show it up in its true light, because in the borings there is always the chance that the spot which is the worst will be missed. To arrive at the causes of this late catastrophe we will take up these three causes in order and discuss them.

First, the design: Assuming that the rolled embankment on the upstream side of the dam is impervious, I have figured the dam for stability above the section AB, at elevation 186. The water pressure is 27,200 pounds per lineal foot, the weight of concrete 51,500 pounds per lineal foot and the uplift zero. The resultant pressure passes 1.6 feet inside of the middle third of the base and the center of gravity of the concrete is just inside the middle third. No fault could be found with this.

Assuming that the rolled embankment is not impervious and the underlying rock is porous, permitting hydrostatic pressure against the whole face of the dam and under the base—the worst possible case—the stability is not so good. Figuring the overturning and resisting moments about the edge of the middle third of the base, the overturning moment is 2,200,000 foot pounds and the resisting moment 1,320,000 foot pounds for one lineal foot of the dam. While this would not overturn the dam, it would put tension in the face of the dam, which would be bad practice. The rolled embankment against the face of the dam was to prevent this condition being realized. Whether it prevented it is mere conjecture. I think it is doubtful.

During a flood in January, 1910, a section of the dam near the middle slid downstream as much as eighteen inches at one point. This has been discussed in the Engineering News of March 17, 1910. The resistance to this action was the friction of the concrete against the rock on which it was built; on going deeper, the friction of one stratum of rock upon another. Had the dam been built in the form of an arch, which seems to be the best practice at the present time, this frictional resistance would have been spread over a much larger area—in fact, over the base of the whole structure, and in this way would have been much greater. This is practically the only fault which might be found with the design.

As to the construction: The quantity of concrete was large, 15,780 cubic yards, and it was hurriedly placed. Some of it was placed in freezing weather, about six weeks before the flood of January, 1910, and in the continued cold weather had no chance to attain its proper strength before it was subjected to an unusual strain. Then, too, when the dam was completed, but before the water was turned in, two vertical cracks appeared, due probably to contraction, as there was no sign of settlement in the base. On these accounts some fault might be found with the construction.

Last, the foundation: After the flood of January, 1910, it was observed that a portion of the rolled embankment on the upstream side of the dam had been washed away, some of it going under the dam. Also the toe of the dam had settled a little at one point. This indicated that the fault might be with the rock foundation upon which the dam rested. Accordingly, excavations were made at the bottom of the concrete on the upstream side and it was found that the stratum of rock directly under the concrete had broken at a point twelve feet from the face of the dam and slid downstream. This stratum was six feet thick. The water, getting under this layer of rock, softened up a layer of clay between it and the layer below and introduced hydrostatic pressure under the dam. This pressure worked up against

the weight of the concrete and permitted the top layer of rock to slide forward on the lower one and the thin stratum of clay between the two, being wet, served as an ideal lubricant.

Since these conditions were observed after the flood in January, 1910, when the dam was put to a severe test and almost failed, it is almost a certainty that the same causes led to its going out on September 30, 1911. We say that the Bayless dam failed on September 30, 1911. It really failed in January, 1910. It was said to leak then, but the real failure had already taken place.

* * *

Millions of Dollars Due California for Government Irrigation

By A. R. KANAGA.

THOUGH our reclamation law was passed eight years ago, and our Government is wisely spending $119,555,000 in reclaiming arid lands by means of irrigation, yet California, which has more arid and semi-arid land than any State in the Union, has up to the present time received practically nothing from this national fund. Let us see how the other States have fared.

Arizona has received	$13,640,000
Colorado	9,865,000
Idaho	19,719,000
Nebraska-Wyoming	10,280,000
Montana	15,695,000
Nevada	6,380,000
New Mexico	10,250,000
North Dakota	880,000
Oregon	6,060,000
South Dakota	3,000,000
Utah	2,063,000
Washington	11,558,000
Wyoming	6,750,000

California's sum total in one project up to this hour is only $620,000, and the combined so-called Oregon-California and Arizona-California projects will complete every ditch on the California side for less than $250,000, and the latter sum will not be spent for years, in my estimation, making less than one million for California.

New Mexico has one single enterprise that will cost $9,000,000, known as the Elephant Butte, or New Mexico-Texas project.

We have more semi-arid land than Montana, and I have been over that State from end to end, and yet they are in the front with $15,695,000, and our needs are the equal of that State, and we have the semi-arid land and the water just as they have, but those Montana men went after those millions while our people reposed in a somnolent sleep.

The land commissioners of Idaho in their last report say that forty-nine private irrigation companies are operating in that commonwealth. If that is true a very large part of their land is taken up, and California has five times as much available land for irrigation as Idaho, and yet the latter gets $19,719,000 to our $620,000.

I have attended the last twelve sessions of our National Irrigation Congress, and when I contrasted the large attendance and vital interest of other States with the apathy of California as shown in her half dozen delegates, I was discouraged beyond words to express it. Other States have been in this reclamation sack with both hands and feet in their wild scramble for money. You must remember that this money comes from

the sale of public lands, and our State has brought in fifteen times as much in this way as Arizona and some other States, and we have seven times as much arid land here as they have in the last-named territory, yet they have secured $13,640,000, and our State $620,000. You ask, What are we going to do about it? I answer, get to work. Lay these facts before your Senator or your Congressman and send some delegates from your country to Chicago, and attend our next National Irrigation Congress and show your interest in vigorous and aggressive action that one or two of the next projects taken up shall be in this State. Our State has today more than 1,500,000 acres of semi-arid land needing water. Yet this fund is being diverted to all other States but ours. We have only one man in our National Irrigation Congress on the firing line. I refer to Col. John Fairweather, of Reedly, Fresno county. He has attended every session for the last fourteen years. How did it come that we actually got the little sum of $620,000 for the Orland project? Well, we owe that enterprise to the work of one man—Frank Freeman, a lawyer up at Willows. He worked in season and out of season for three years. Then he packed his grip and went to Washington, and through the labors of Congressman McKinlay secured the above sum. Another worker is F. G. Vivian, owner of the King City Rustler. He has worked like a beaver for five years past to get Uncle Sam to irrigate the Salinas Valley, and he will yet have success, for such labors never go unrewarded. You ask who is to blame. I will answer by saying, we cannot blame the Reclamation Service, for these men, from Fred Newell down, are a grand body of men, and simply go ahead and do what they are commanded to do.

No blame can be attached to our Senators or Congressmen. They did their work. They got the reclamation law passed, and it was then, and is now, up to the people to make their demand for government aid. Now I have seen nearly every irrigation project of any size west of the Mississippi river, both government and private, during ten years past, and between 1899 and 1907 I owned the widest circulated irrigation journal in the world, and my duties made it imperative that I keep well informed on the subject, and what I say is based on a physical examination of the projects in the West. Now as for the Oregon-California, or better known as the Klamath project, they have in Oregon 300,000 acres, and about 10,000 acres in California, and nothing will be done to reclaim our land across the line for years to come. This $4,860,000 spent by the Government was, and is, for Oregon, and not for us.

Take the so-called Arizona-California project at Yuma. Five million dollars is being spent here, and it irrigates 110,000 acres in Arizona and only a small tract over in California, for only a small part is carried over on the California side, where most of the lands are included in the Indian reservation, and not $100,000 will ever be spent on the lands on our side of the line. These last two projects have been paraded before our people as California enterprises, or joint ones, with States named, and I protest against their being held up as California projects in any respect. They are Oregon and Arizona enterprises, pure and simple.

Our Government has now before them projects in course of building that are to cost when completed $119,555,000, and it is estimated that $50,000,000 will be spent by the Reclamation Service in the next five years, and unless we do something we will not get a dollar of it.

Now let us get something done for California, and do it right away. Let us commence on the Salinas Valley, for here is the largest tract of semi-arid land in one body in our State. They have 400,000 acres of land

between Salinas and Bradley. This land has today a nominal value of about $25 per acre, and with irrigation it is worth six to ten times that sum. No one need tell me that they have no water, or that the project is not feasible, or that the land is held by large land owners.

Every question as to the feasibility of this district was settled three years ago when the Polytechnic College of Engineering of Oakland, the most thorough and practical engineering institution on the coast, made a test survey and examined the soil, canal route, places for reservoirs, and water storage, and they demonstrated that in every respect the project was one that could be installed.

What has probably misled the people was the belief that the so-called Oregon-California and Arizona-California enterprises were joint California projects, and that as much money was spent for our own State as for the States of Oregon or Arizona; but in fact we got practically nothing from either, and I protest against these projects being paraded before the people as California enterprises, for they are not. I have been all over Southern California, and they have a half million acres down there too costly for private enterprise, but capable of irrigating by means of storage reservoirs which our Government can build. Two big projects are now due us, and the people down there should have one of them, for they deserve it, and will get one of them if they go after it.

* * *

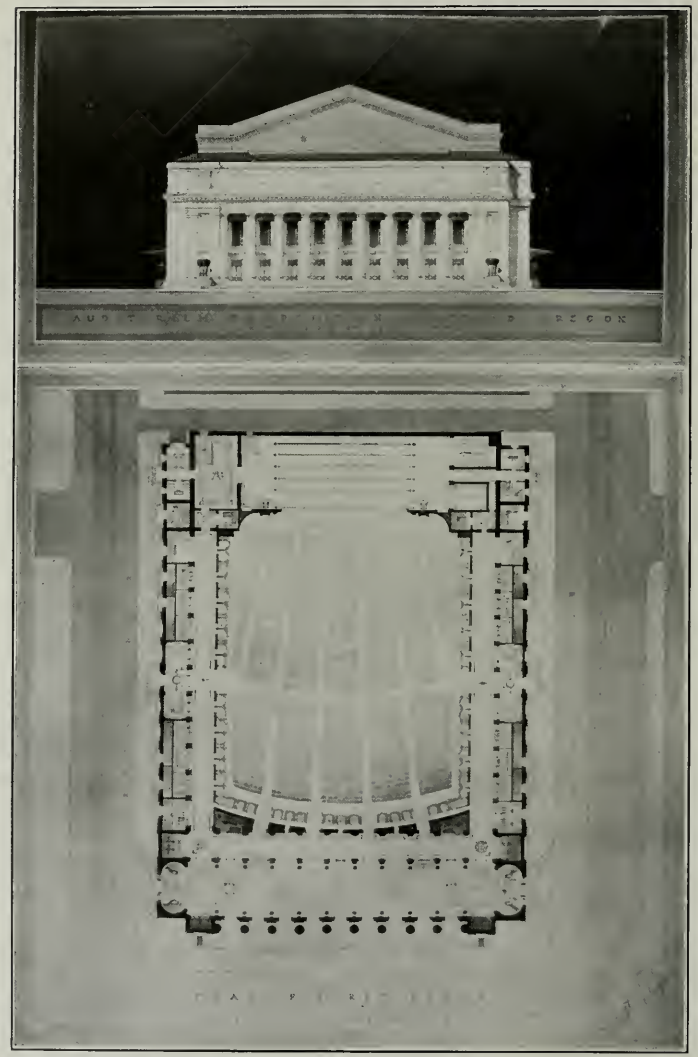
Decorating the House

THERE is always a fascination about dealing with the parlor; even in the most ordinary houses it is the apartment on which care and money are lavished—money must be taken here as a relative term—and it is frequently looked upon as the showroom of the house.

Modern decorative art, whatever it may have failed to accomplish, has done much to discourage this idea; its effort has been to make the parlor an artistic center, like every other room in the house, but at the same time a real live, useful and interesting room, not uncomfortable or incongruous. If a room suggests the creeps, there is something wrong; if it looks like a miniature public museum, it should be altered. Who but an antiquarian could feel at home in a public museum?

Turn out all your trumpery then; if you must collect bric-a-brac and silver spoons, and arrange them all in a small room of the house labeled "The Museum."

In dealing with the parlor it is sometimes a disadvantage to have a blank cheque arrangement. Then Europe is ransacked for original eighteenth century furniture and fabrics, and the exact reproduction of a room in an old French chateau is aimed at. Could any idea be more incongruous? Have we eighteenth century French architecture, customs, manners, concerns? Have we not grown since the days of the grand Louis? In exhibitions and museums the thing is right and proper, but in ordinary every-day decoration every period should be strong enough to evolve its own distinctive style. Why, if this were not the case, where would all the history and achievement of decorative art be there would be no Elizabethan style, no Jacobean, or William and Mary; no Queen Anne or Colonial; no French or Italian styles, or styles such as Chippendale, Hepplewhite, Adam and Sheraton; Morris would be nothing more than a name, and all that has been achieved by modern art would be as good as dead. We have more experience, ability, interest and necessity to create a style than any of our predecessors in the nineteenth, eighteenth and seventeenth centuries, and if we neglect our obvious mission, so much the worse for our period and our successors.—John Taylor, in the Decorative Furnisher.



First Prize Portland Auditorium Competition
J. H. Freedlonder and A. D. Seymour, Architects, New York

The Portland Auditorium Competition

PORTLAND'S architectural competition for an auditorium, held under the rules of the American Institute of Architects, has resulted in the selection of the design of Architects J. H. Freedlander and A. D. Seymour of New York City. The other awards made by the committee were as follows:

Second, Lazarus & Logan, Portland, Ore.; first third, Russell, Gilstrap & Riley, Portland, Ore.; second third, J. Milton Dyer, Cleveland; third third, John Graham, A. A. I. A., Seattle, Wash.

Honorable Mention—A. Norbury Somerwell, Seattle; Dennison, Kirons & Darbyshire, New York; Edward T. Foulkes, San Francisco; Glenn Brown and Bedford Brown, Washington, D. C.; Lord, Hewlett & Tallant, New York; King & Walker, New York; Righetti & Headman, San Francisco, Cal.; Walter T. Karcher and Livingston Smith, Philadelphia.

The first winner gets the contract for the working plans and superintendence of construction; the second winner receives $1000 in cash, and each of the third winners are awarded $500 in cash.

The jury, comprised of Ellis F. Lawrence of Portland, Kirtland Cutter of Spokane, and Willis Polk of San Francisco, made a written report of the work of selecting the plans, which was, in part, as follows:

"The author of this design (first prize) frankly surmounts the difficulty of temporary stage equipment and gives a straightforward, simple solution of the whole problem, providing most completely for such temporary stage equipment as might be desirable. He presents a building which, in general character, would stamp itself at once as a public auditorium and would in every respect meet all the requirements of such a building. Ingress and egress of a large number of people is amply provided for.

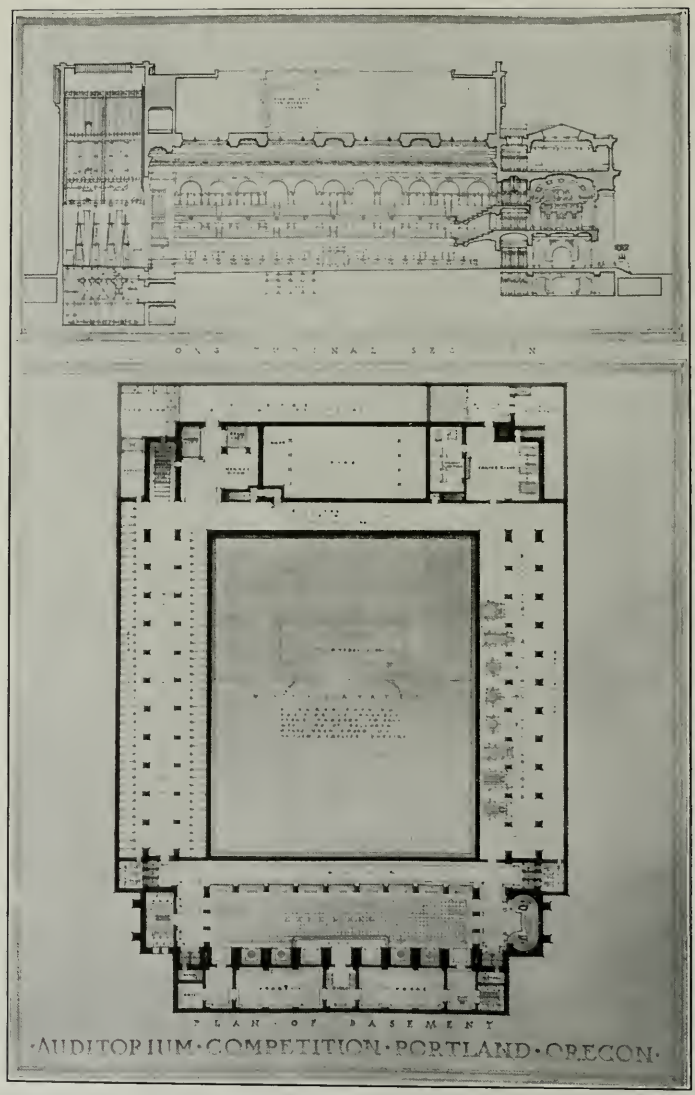
"Ample provision is made for a dignified housing of the Historical Society and for offices and studios. Of all the plans submitted, we believe the quarters of the Historical Society, as set forth in this design, to be the most attractive. This plan, upon closer analysis, will reveal the possibility of a number of small halls for divers purposes and ample space for offices and studios.

"In some of the details of arrangement, further study will no doubt result in improvement, such as elimination of the proposed horse-lift and substitution therefor of an incline, occupying practically the same space, and the subdivision of the seating arrangement of the arena by additional cross or transverse aisles."

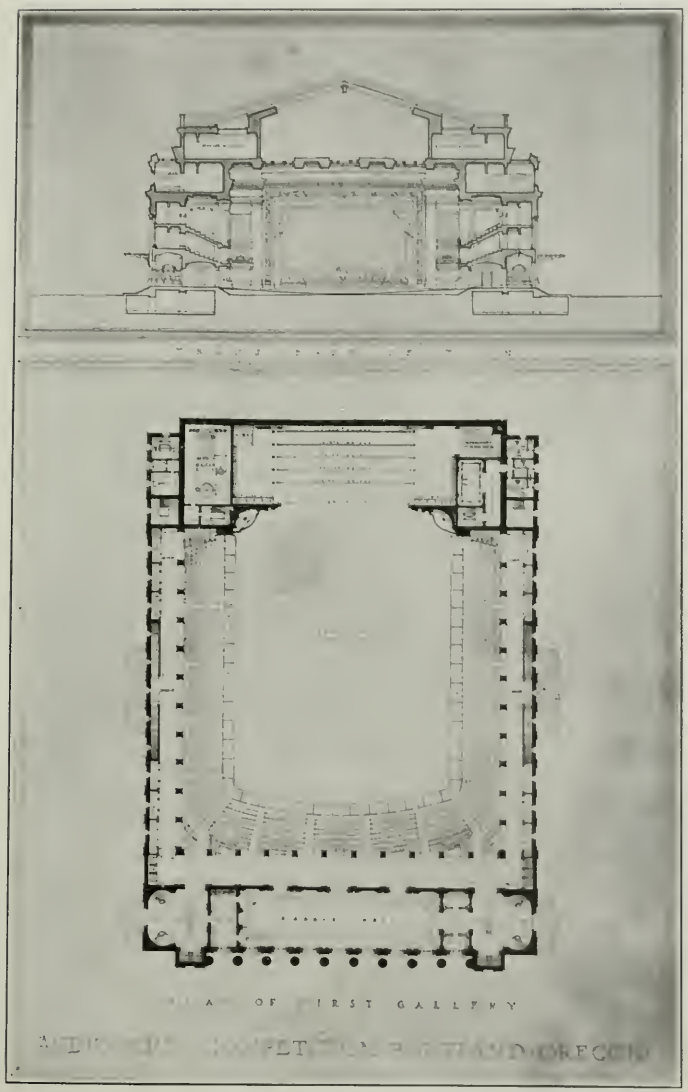
The auditorium as accepted has a front elevation of a classic style. Ten pillars extend from the top of a tier of stone steps to the top of the second story, supporting the upper part of the building. The plans shown in the competitive drawings are for the Market street site.

The first floor plan shows a large lobby with ample stairs and elevators for the Historical Society and banquet hall. The banquet hall is on the first balcony level and is entirely independent of the auditorium.

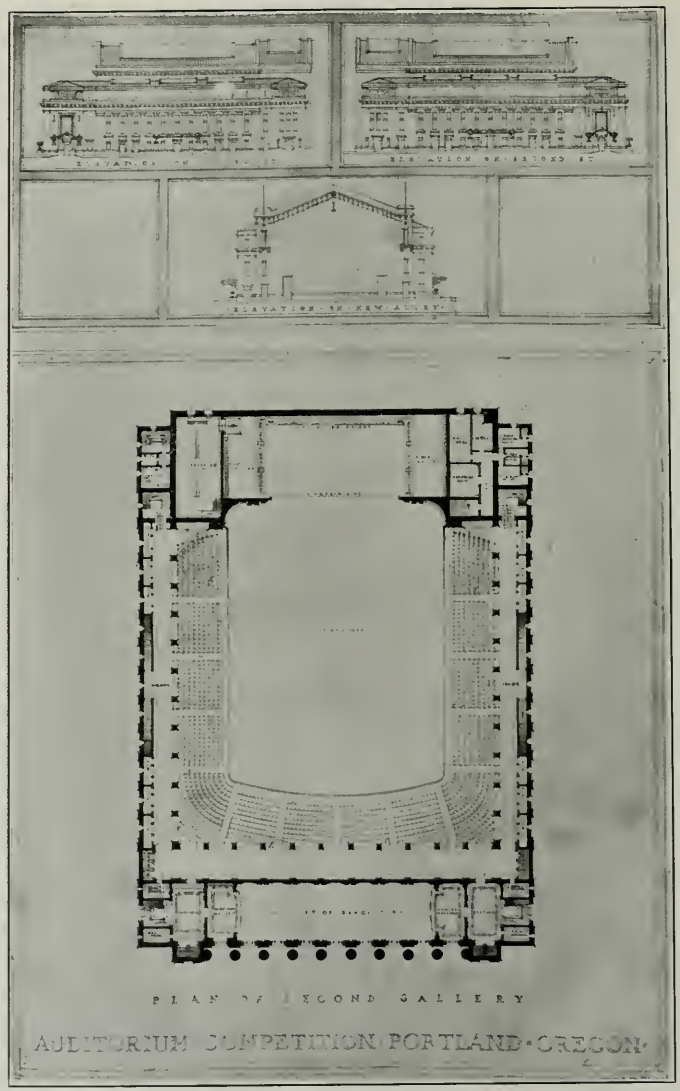
It has been deemed proper to arrange for a permanent stage thoroughly equipped for large theatrical or operatic performances. As arranged it is adaptable for convention purposes, large organ recitals and concerts. For horse shows and circus performances the stage can be dropped to the level of the auditorium floor, thus forming a lobby for classes for horses and assemblage of circus acts. A runway for horses leads from the alley directly to the stalls in the basement. For circuses the horses and wagons can be brought to the stage either by a large lift or by the runway.



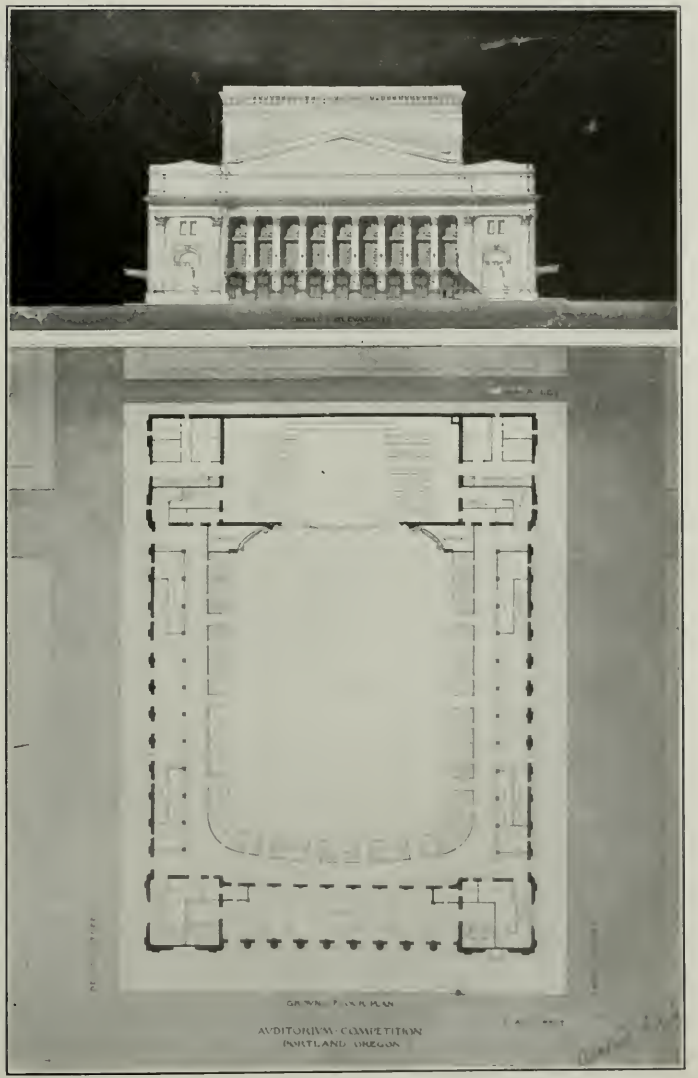
Basement Plan Portland Auditorium
J. H. Freedlander and A. D. Seymour, Architects



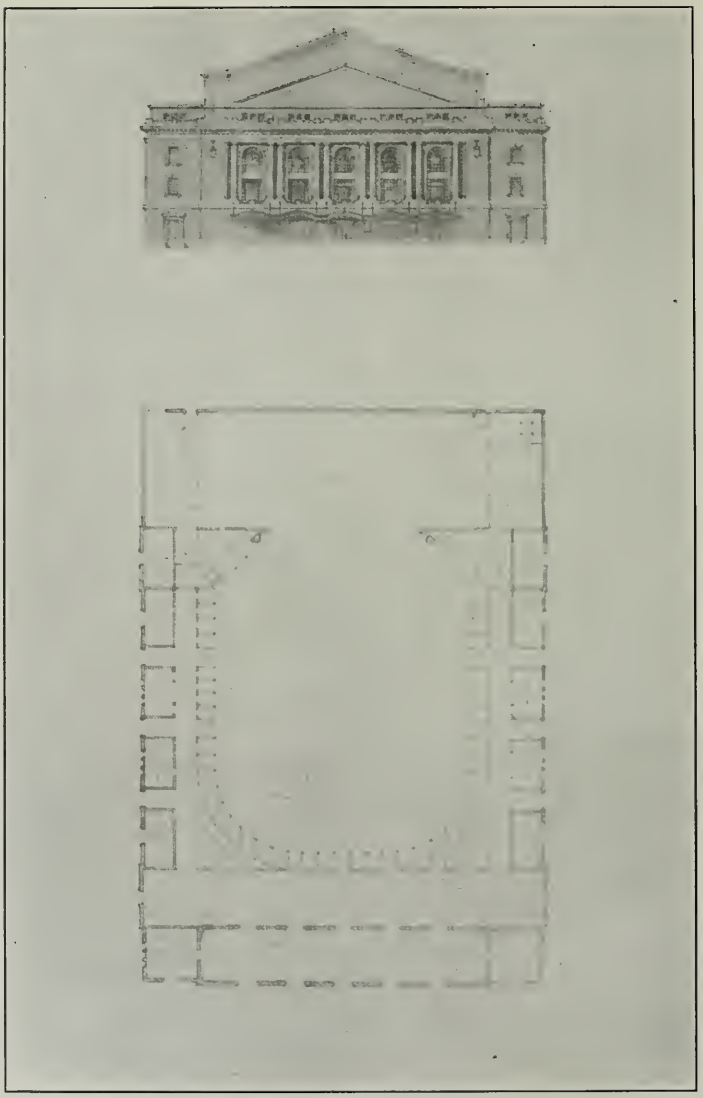
First Gallery Plan, Portland Auditorium
J. H. Freedlander and A. D. Seymour, Architects



Second Gallery Plan, Portland Auditorium
J. H. Freedlander and A. D. Seymour, Architects



Second Prize Plan Portland Auditorium Competition
Lazarus & Logan, Architects, Portland, Oregon



First Third Prize Plan Portlond Auditorium Competition
Russell, Gilstrap & Riley, Architects, Portland, Oregon

In view of the capacity of the house, supplementary carriage exits have been provided on Second and Third streets, the main one being off the public lobby on Clay street. This lobby is so arranged that access is had to it without passing through the auditorium.

All entrances and exits to galleries are designed in conformity with the fire laws, special care having been taken to provide ample circulation and staircases.

On the first gallery floor a large banquet hall has been arranged over the lobby. This room is two stories in height, and besides its function as a banquet hall, may be used as a lobby in connection with theatrical performances or as a ballroom. It is provided with a pantry or service-room, communicating by a dumb waiter with the kitchen on the roof.

The organ is arranged so that it is played from the balcony at the first gallery level. At the level of the second gallery a women's gallery on one side and musicians' gallery on the other have been provided, and are arranged so as to overlook the banquet hall.

On the floor above the second gallery a large exhibition room and smaller rooms of the Historical Society and small lecture halls are arranged and extend around the three sides of the building.

On the principal facade the main exhibition rooms are in the attic and are lighted by skylights. Offices are arranged in the roof tresses. Special entrance with elevator and staircase, has been provided for this office floor.

In the basement a cafe and bar are situated on the Clay street front, with access from the main floor by staircases at the ends of the lobby. Along Second and Third streets stalls for horses and space for circus and horse shows have been laid out.

To reduce the auditorium to the proportion of a small theater an arrangement has been effected whereby a second temporary stage is installed. The stage can be brought to the necessary height above the auditorium floor by means of jackscrews.

At the same time a temporary proscenium is set in place and the boxes and second galleries are swung out to form a fan-shaped theater, all as indicated on the basement-floor plan. When this theater is not in use, the glass skylights are moved together, covering the ceiling openings in the stage.

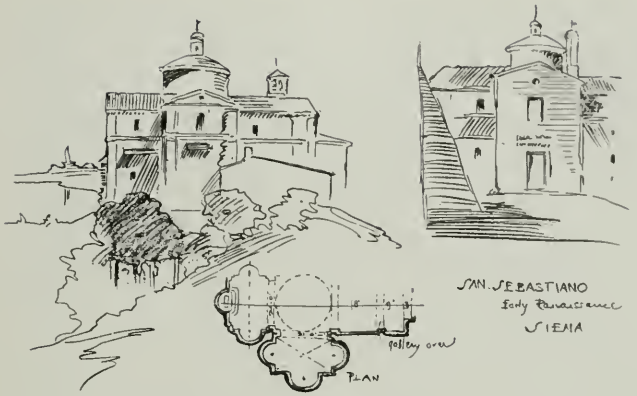
* * *

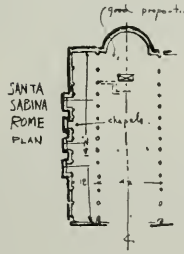
The Origin of a Bungalow

The word bungalow is an Anglo-Indian version of the Hindi bangla, which primarily means Bengali, or of Bengal, and is also applied to a thatched hut, says Country Life in America. It may be worth while to explain how this trivial and merely local name came to be fixed on the Englishman's house in India.

Early residents there, engaged in military, administrative or trading duties, lived a nomadic life for the greater part of the year in tents. And since there was nothing in the indigenous buildings of Bengal suited to their requirements their first dwelling houses, designed by themselves and built of materials at site, were naturally planned on the model of the Indian service tents to which they were accustomed—that is, a large and lofty room surrounded by double walls of canvas enclosing space between them, with partitions at two or more corners for bath or store rooms.

Sketch of Organ Detail, Santa Maria, Siena, Italy





[AUTHOR'S NOTE.— The accompanying sketches and measured drawings are the result of much serious study by the writer, and represent but a selection of many drawings, best adapted for reproduction. It is the writer's intention to follow this article with other architectural details of interesting towns in Italy, France and Spain, and it is to be hoped that these sketches will prove of value to those interested.]

Interesting Cities of Italy

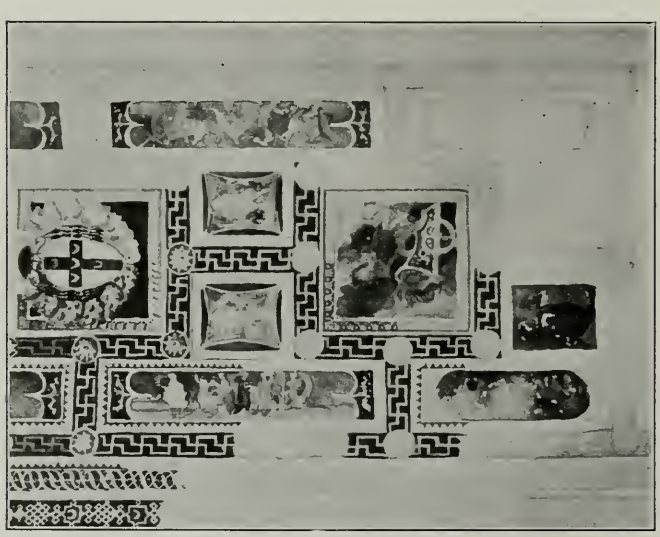
I –Siena

By AUGUST G. HEADMAN, Architect.

THOSE of you who have visited Siena, know of its many charming examples of art of the thirteenth to sixteenth century. Next to Rome, Florence and Venice, Siena is the most important town in Italy. The period of Sienese art belongs to the middle ages, when the towns of Italy had begun to pride themselves on their practice of art, but before the pedantic element had given way to the pure sense of the beautiful. There is no town in Italy which presents such instructive examples of the Italian Gothic Architecture of the thirteenth and fourteenth centuries as Siena, where we find magnificent stone buildings intermingled with graceful structures in brick.

Sculpture as well as architecture found a free and full scope in Siena, the most vigorous examples being displayed in the facade of the Cathedral of Orvieto, and several of its sculptors were honored by an invitation to compete in the memorable competition of the decoration of the doors to the Baptistry in Florence.

Frescoed Vaulting, Piccolomineo Library, by Pinturicchio and His Pupils



Frescoed Ceiling, Piccolomineo Library, by Pinturicchio and His Pupils

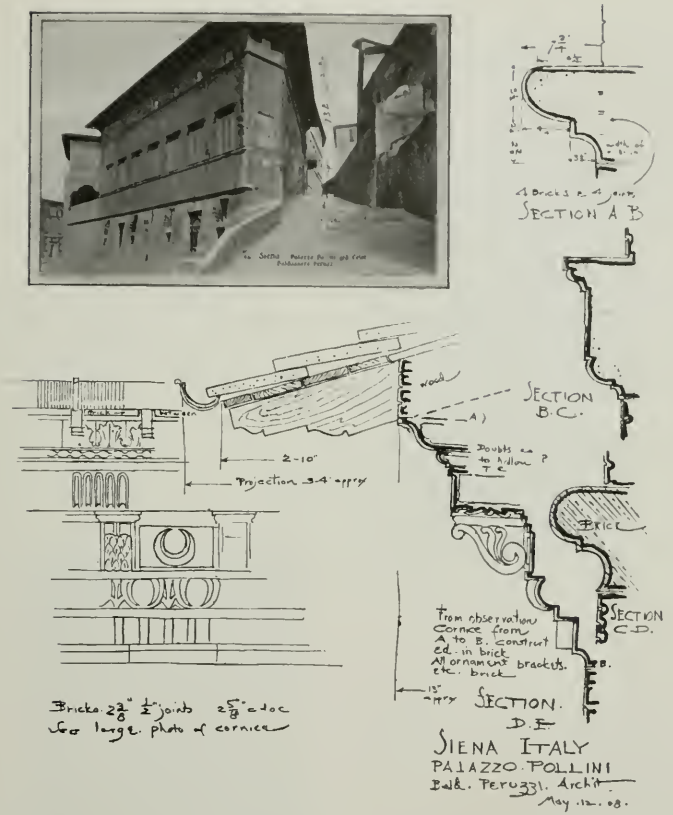
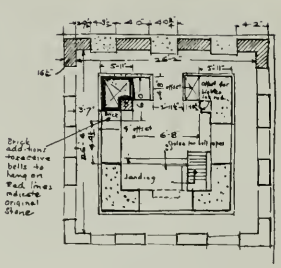


Photo and Sketches, by August G. Headman

Jacopo Della Quercia of Siena, was one of the founders of Renaissance sculpture and his somewhat graceful style, akin to that of Michael Angelo is well represented in the fonts of San Giovanni and Gaia.

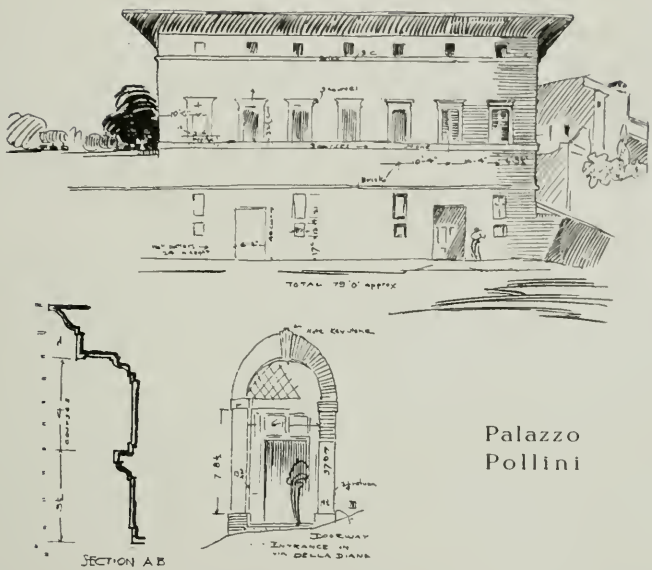
Painting too, was the favorite art of the early Sienese, and was well represented by Simone Martini, who has been immortalized by a sonnet of Petrarch and who like his contemporary, Giotto, practiced his art and exercised his influence far beyond the limits of his native city. Works by him are to be found at Naples, Orvieto, Assisi, and other southern towns, so famous indeed was his name that it is unusual to attribute to him all the best works of his period. The paintings and vault decorations of the Piccolominea Library by Pinturicchio are supposed to be a result of the



NOTES
TOWER AT BASE 23 5 APPROX
HEIGHT OF TOWER ACCORD
ING TO BAEDEKER 335 FT
BUILT 1325 FIN 1345 412 steps
SHIELDS ON TOWER AT LEVEL A
PAINTED LION IN RELIEF

TORRE DEL MANGIA
SIENA ITALY
One of the Noblest Towers
in Italy
May 12 08

Photos and Sketches by August G. Headman, San Francisco



Palazzo
Pollini

Sketched by August G. Headman

influence of this master, and are a marvel of harmonious composition and color.

The life of the town is centered about the Piazza del Campo, which is enclosed by many interesting structures, the one of most importance being the Palazzo Pubblico, a huge edifice built of brick and marble, with pointed windows divided by small columns. Adjacent rises the slender Torre del Mangia, dating from the fourteenth century. Howells is credited with saying that, "When once you have seen the Mangia, all other towers, obelisks, and columns are tame, vulgar and earth-rotted." This tower seems to quit the ground, not as a monument but as a flight.

Within a few minutes walk is located the interesting Palazzo Pollini by Baldassare Poruzzi the architect, and famous painter. This structure, displays most interesting and delightful proportions with a splendid and logical use of brick and terra cotta. Almost directly adjacent is located the charming and delightful early Renaissance Church of San Sebastiano, a church quite unfinished, but possessing enough real architecture for much thought and study and is especially interesting on account of its true expression of plan.

All of these buildings, with their well studied details, have served for many years as an inspiration to architects of this day.

With the Contractors

Elevating the Building Business

By WILLIAM E. HAGUE

THE erection of buildings by contract is an old, well established and legitimate business and should be conducted on a dignified and conservative basis. The General Contractors Association has sought and found future headquarters which will be of dignified proportions such as will command the respect of the business community and tend to elevate the standing of the building business.

In "The Saturday Evening Post" of November 4th appears an article "How to beat the building game," written by Mr. B. A. Howes, who is evidently familiar with all the evils which beset the building business. His conclusions are well fitted "to point a moral and adorn a tale." It may be well to remark that the author points out, in a logical way, that the best method for an architect to get the best value for his owners' money is by selecting some good, responsible general contractor and awarding him the entire contract.

There is probably no legitimate business which is so largely engaged in throughout the world, which gives employment to so many men and which offers so many opportunities and inducements for crooked dealing as the business of building. The first thing which an architect and owner should consider is the honesty and responsibility of the contractor to whom he proposes to award the contract for the erection of his building. The lowest bid only too frequently means the poorest building and a poor building is the poorest investment which capital can make.

The General Contractors Association is endeavoring to establish a high standard of efficiency among its stockholders and to admit only those who are financially capable of carrying out the work they undertake, and whose skill and efficiency will lead to confidence on the part of owner and architect alike. This does not mean that only those of large means are admitted, but applications for stock are carefully investigated and the applicants past record in the building business examined. In this way it is intended to build up an Association which will stand for responsibility and be a guarantee to the architect and owner that the contractor is one from whom he may reasonably expect good work and full value for his money.

The membership of the Association is divided into two classes, stockholders and members. The stockholders are composed only of general contractors, each of whom holds one share of stock, (neither more nor less), of the par value of $500, for which he must subscribe before being elected. The members are composed of specialty contractors, material men, insurance men, etc. The general contractors control the Association and the specialty contractors have their own, individual associations.

An important work which the Association is planning to carry out is to keep out the irresponsible men from entering the local field and competing for business. A practical plan for accomplishing this much-to-be-desired end is now being put into effect and it is expected that the building business of this city, in the rush times which all expect before the World's Fair, will thus be relieved of the "carpet bagger" class of "fly-by-nights" who created so much confusion and loss after the fire. The legitimate, responsible contractor, coming in here from the East, will be taken into the Association and the stamp of its approval thus put on his name.

This is good work, along legitimate lines, and should meet with the approval and support of architects and owners alike.

* * *

The Liability Situation.

THE passing of Constitutional Amendment No. 32 has cleared the way for the enactment of compulsory compensation to workingmen in case of industrial accidents.

We are glad to be able to state that the drafting of the proposed law will go over until the next session of the Legislature in January, 1913, as we are in receipt of a letter from Senator Roseberry (the author of the present liability law), to this effect. We say that we are glad that this is the case, because such a bill as is proposed will be very drastic in many of its features, and such important legislation should only be approached with the greatest care and consideration. The proper compilation of the necessary data cannot possibly be accomplished in less time, as such a law is only an experiment in this country up to the present.

While it is true that compulsory compensation insurance has been in effect in some of the countries of Europe for a number of years, yet the conditions and wages governing the workingmen and mechanics in those countries are entirely different to what we have here, and the tables which they have compiled from past experience, and on which their rates are based, could not possibly be used in this country except in a comparative capacity.

By the foregoing we do not mean to say that the proposed law is going to work a hardship on the contractors. On the contrary, it will probably prove beneficial in the long run, as the burden will be borne by the community at large.

Practically all the contractors are carrying liability insurance under the new law, and very few have elected to carry voluntary compensation insurance owing to the prohibitive charge of the liability companies for that class of policy. God knows the rates on straight liability insurance are high enough! However, some of the largest employers of the State have decided to bring themselves under the provisions of voluntary compensation insurance without waiting for the compulsory statute. The award of $92,000 to one injured man by a recent decision against the Southern Pacific Company is no doubt the reason for these large employers being willing to settle out of court under the terms of the voluntary compensation feature. The Pacific Telephone and Telegraph Company is among the large employers of the State who have elected to protect their employees under compensation insurance. This company alone employs seventy-five hundred men.

The voluntary compensation law, which is embodied in the new liability act, and which has now been in force for two months, simply provides that in case of injury the employer shall be liable for doctor and hospital bill

up to $100, and if disability is caused he shall pay 65 per cent of the average weekly wage during disability, the total of such payment to be not more than three years' wages. In case of death the payment is to be made weekly to dependent relatives, and shall not aggregate more than $5000 or less than $1000. Payment must be made for each and every accident, however, regardless of the fault of either party. It is this latter feature which makes the cost of the insurance greater than for straight liability insurance. The contracting business being on a keen (almost cut-throat) basis at present, the contractor naturally hesitates to increase his expenses unnecessarily. When compulsory compensation insurance is in effect the charge for the protection will have to be borne by all alike, and will become a fixed charge on a building and on the community at large, where it properly belongs.

The State Board is getting all possible data from other States and foreign nations upon the rates and extent of compensation, and the rules governing its collection from employers, so that the law, when passed by the Legislature, may be comprehensive and the rates established enough to properly maintain a sufficient reserve fund.

Commissioner Pillsbury is preparing a bill to be submitted at the next regular session of the Legislature in January, 1913, which shall provide a scheme of compulsory compensation of all employees against liability under the compensation law, and fourteen months will not be any too long a time in which to gather the necessary data.

The California Building Law Association, of which this Association is a member, is going to watch the proposed Legislature very carefully, and will keep in touch with all that is being done in the framing of the bill, and we may rest assured that we shall go to the bat in 1913 equipped with full information of all that has been done, and prepared to work intelligently for a bill which will be fair to the contractors. It is well to bear in mind in this connection that we now have the initiative, referendum and recall in this State, and if any law passed by the Legislature does not meet with our approval, there is now a means to hand whereby we can have it repealed.

* * *

An Informal Banquet.

The General Contractors Association is giving an informal dinner at the St. Germain, on the 23rd of November. This is by way of celebrating the closing of its lease on its new headquarters in the building to be erected by the Sharon Estate Company on the northeast corner of New Montgomery and Jessie Streets. A number of those not yet members of the Association have been invited to attend as it is desired to get all the responsible general contractors together in this strong Association.

While this is to be merely an informal occasion the dinner is nevertheless an important event in the history of the building industry of this city as it celebrates the closing of a lease on headquarters for the builders such as they have never had before.

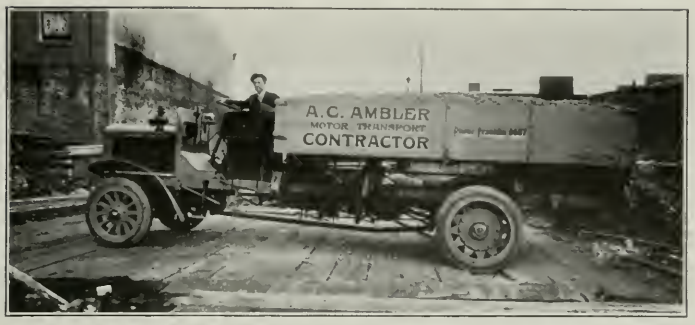
* * *

An Embryo Architect

A popular conception of the architect's failing in completing a house within the estimate is illustrated in the story of the proud father who thought he discerned great architectural talent in his six-year-old son.

"Why," asked a neighbor, "does he draw well?"

"No," replied the father, "but he started a few days ago to build a hencoop at an estimated cost of 65 cents, and it has already cost me about $3.50."—Exchange.



A Six and One-half Ton Commer Truck Fitted With a Six Cubic Yard Side-Dump Body. A. C. Ambler, Building Material Transportation Contractor, at the Wheel

Motor Trucks for the Contractor and Material Man

BUILDING material men have been studying the subject of motor truck delivery for a number of years, and quite a large number of firms have installed them with the most satisfactory results. No association meeting of dealers, whether it be a state organization or the national body, has a program of addresses up to date, unless it includes something on the subject of motor trucks. The dealers are interested, and they are buying them.

The purpose of this article is to tell the dealer something on the subject that will aid him in arriving at a conclusion. It is said that every man on earth with real red blood in him either owns an automobile or wishes he did. The dealers who own motor trucks are glad of it, and the time is at hand when every dealer will wish he had such a delivery conveyance.

It is, of course, the matter of cost that determines in every case the wisdom of making use of anything new. It is probably true that the average dealer keeps no accurate account of the cost of maintaining his teams.

If the proper items are charged up for depreciation and upkeep of horses, wagons and harness, stable expenses, etc., the round figures of $6 a day for a two-horse team and $8 a day for a three-horse team will be about right for ordinary work. Twenty miles a day is the limit for a light vehicle, and sixteen to eighteen miles for a three-ton load, or a three-horse shift for five tons. To cover the mileage mentioned horses have to be on the move five or six hours a day. The remaining four or five hours can be used in loading and unloading.

But what about the motor truck? It requires no rest. It is a fact that the ordinary motor truck is capable of three or four times the mileage of horses, and customers will get quicker delivery and the dealer will be able to reach out further into new territory and get business where he can deliver materials. The following table of costs has been compiled by one firm that has made long and careful observations, and they are regarded by the motor truck trade as authoritative:

It is often the practice in cities to compel the horse to work as many hours during the summer time as in the winter. There is no reduction in his hours of work, and he is expected to carry as big a load. It is estimated that in New York City alone, over 2000 horses died because of the effects of the heat, during the excessive hot spell last summer. Beyond a doubt a large part of these deaths were due to the unkindness of their drivers and the hard treatment to which the horses were subjected. Many individuals, however, are far more considerate of their horses and shorten the hours during the terrific heat. This, however, was not enough in many cases to prevent the death of the animal. Of course many attempts were made to assist the horse to continue the work, and it was not an uncommon sight to see horses standing at the curb being sprinkled or sponged off. But in spite of all these precautions, almost every block, at some time or other, claimed its victims. Of course, the putting out of commission of such a large number of animals has a very disastrous effect upon the delivery system of the country. Much delay was experienced in the delivery of bread, ice cream, drinking water and other necessities of life, and many families suffered considerable distress upon this account. In some sections of New York City it is claimed a famine of certain necessities of life was brought about through the inability to make deliveries. The fact is that the horse is not a proper means of delivery, and this was simply emphasized by the conditions which prevailed. It is simply one more charge against the horse delivery system.

It has long been claimed that the city is not the proper place for the horse. The old claim that he is too slow, and, with his wagon, occupies too much room, has been brought forward many, many times, and the recent experience of many owners simply adds another point in favor of the motor truck. Beyond a doubt the introduction of the truck is the only proper solution of the hot weather delivery problem. It is faster and will not be affected by the heat, and while the truck may suffer a breakdown, owing to various causes, it can be repaired, which is not the case with the horse. Let a horse injure himself in any way, and as a rule, he is put to death at once. To all careful thinkers the introduction and exclusive use of trucks in the city, offers the only solution to the present condition of congested traffic. Each is enabled to replace three to eight horses and when it is necessary a single truck does not occupy as much space as the team and the dray. The relief which may be obtained by their use, is at once evident. Because of these conditions and the inability of the horse to perform his work as has been clearly shown by experience in summer and winter, it is a foregone conclusion that the time is not far distant when motor trucks will take the place of the horse for city service.

COMPARATIVE COSTS OF HAULING BY HORSES AND BY MOTOR TRUCKS

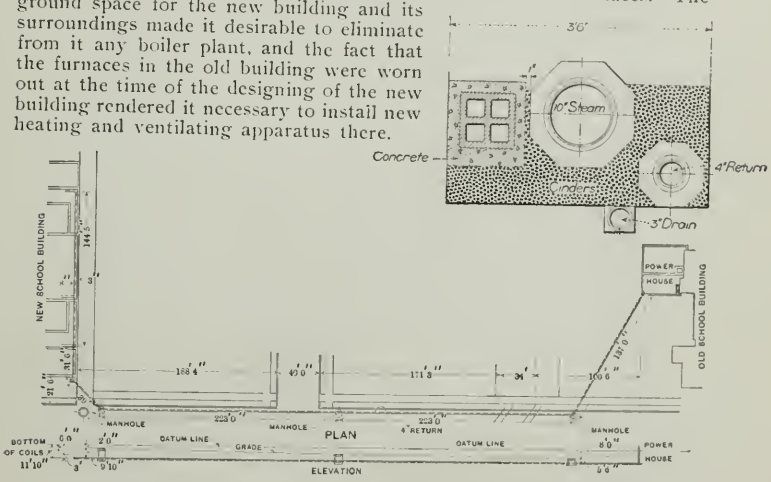
	Cost Per Day	No. Tons Carried Per Load	Daily Average No. Miles	No. Miles Loaded	No. Ton Miles	Cost Per Ton Mile Loaded One Way Only
1-horse wagon and driver.....	$ 4.00	1	22	11	11	36c
2-horse wagon and driver.....	6.00	3	20	10	30	20c
3-horse wagon and driver.....	8.00	5	18	9	45	18c
1-ton motor truck	8.00	1	80	40	40	20c
2-ton motor truck	10.00	2	70	35	70	14c
3-ton motor truck	12.00	3	60	30	90	13c
5-ton motor truck	15.00	5	50	25	125	12c
7-ton motor truck	16.50	7	46	23	161	10¼c
10-ton motor truck	18.50	10	38	19	190	9¾c

Heating and Ventilating Two School Buildings from a Central Plant*

THE construction of a new school building in Decatur, Ill., at a point not far from a similar building in which the heating and ventilating apparatus was to be remodeled, led the school authorities to decide upon a central heating plant from which electric light and steam for power and heating purposes could be supplied to both schools.

The work presented many interesting features which were described in detail by Samuel R. Lewis in a paper presented at the recent semi-annual meeting of the American Society of Heating and Ventilating Engineers in Chicago.

The new building is about 500 feet distant from the old building, which was formerly heated, Mr. Lewis stated, by ten warm air furnaces. The ground space for the new building and its surroundings made it desirable to eliminate from it any boiler plant, and the fact that the furnaces in the old building were worn out at the time of the designing of the new building rendered it necessary to install new heating and ventilating apparatus there.



Underground Conduit for Supplying Heat and Electricity to the New School Building

The old building is of non-fireproof construction, hence it was proper to remove all fire from within it. The new building was to be completed in the spring of 1911. The old building had to be provided with a new plant in the fall of 1909. These considerations prompted the location of the power house adjacent to the old building, especially as coal storage space could be obtained under it, and it would be possible to provide enough capacity to handle the old building through the winter at minimum cost.

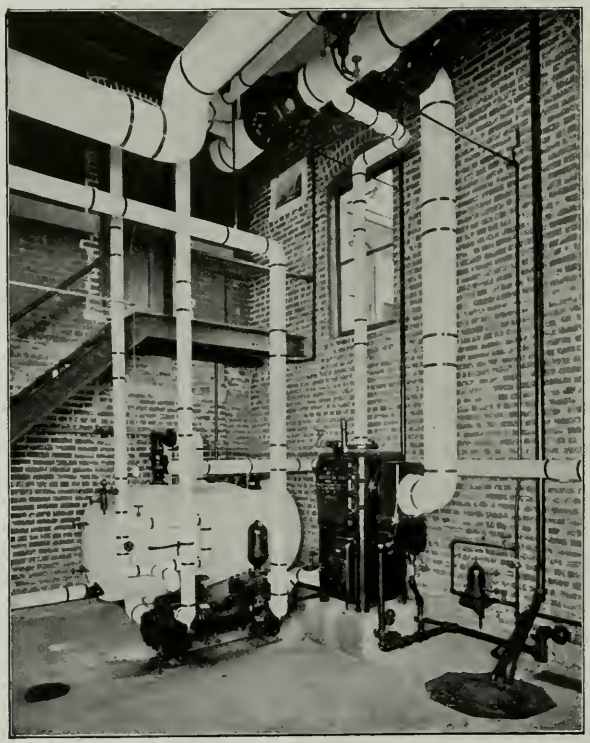
It was planned to provide the most efficient and economical type of apparatus known, with ventilation of all rooms up to at least 30 cubic feet of air per minute per pupil, with new sanitary apparatus, all of the ventilated type, and power for fan propulsion, lighting and manual training machinery in both buildings. Steam, return and electric conduits were permitted under the streets by special arrangement with the city.

*Extracts of a paper by Samuel R. Lewis, in the Heating and Ventilating Magazine.

Advantages of Indirect Heating.

It was decided to install the indirect type of heating, well governed by automatic regulation, as being the most positive and sanitary, as well as economical. Prominent advantages of this system are:

1. It is ordinarily difficult or impossible to hold school without running the fans and securing ventilation.



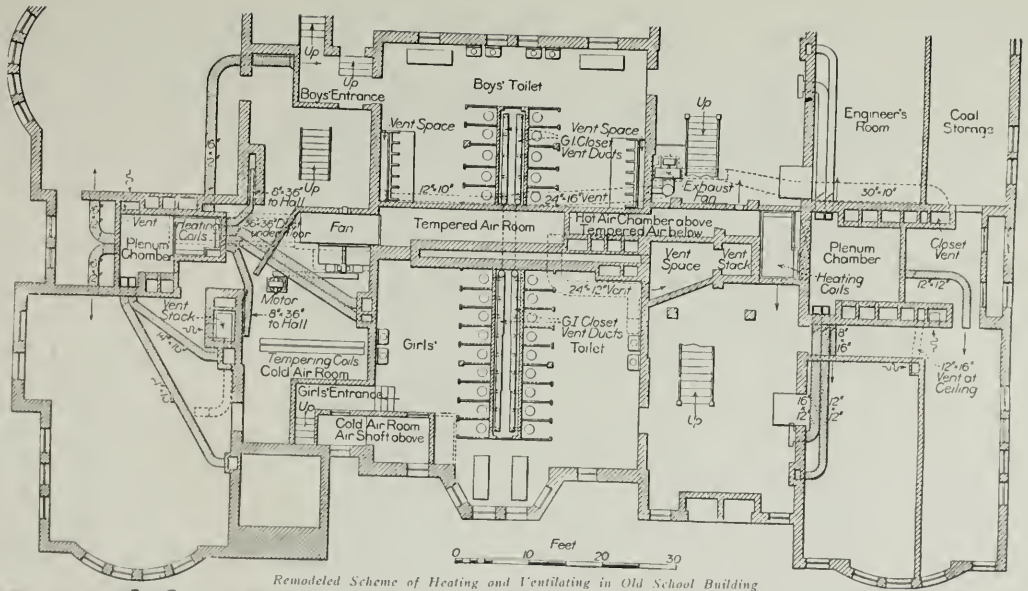
Auxiliary Apparatus and Piping in Power House

2. The pupils in a given room are all subjected to the same temperature and some are not overheated, as they must be when direct radiators are placed in the rooms.

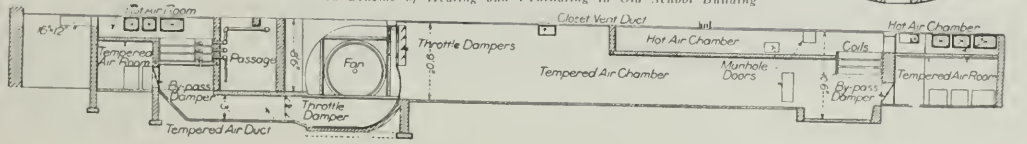
3. The trouble and noise of air valves and steam and water circulation in the radiators are eliminated.

4. The false air circulation by direct radiators destroying diffusion of fresh air is eliminated.

5. The all-indirect plants are found to be more economical of fuel.



Remodeled Scheme of Heating and Ventilating in Old School Building

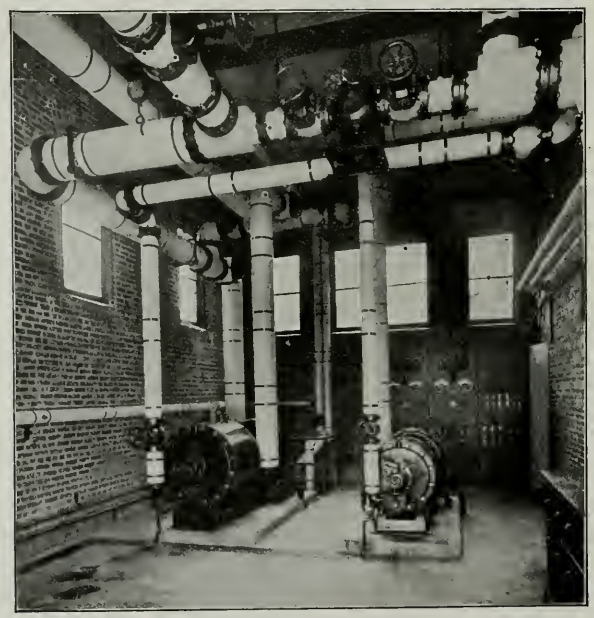


Sectional Elevation through the Remodeled Heating and Ventilating Plant

Cost of Heating Schools in Chicago and Kansas City.

The following data may be of interest:

Chicago: Five schools, with both indirect and direct heating, all of about the same size, averaged, per cubic foot of space heated and ventilated per season, 1.11 pounds of coal. Five other schools of approximately the same size, burning the same kind of coal in the same sort of boilers, but having indirect heating, averaged, per cubic foot of space heated and ventilated per season, only 0.67 pound of coal.



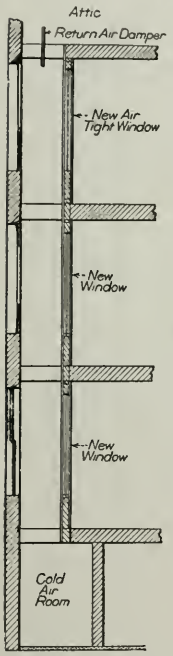
Steam Turbines and Piping in the School Power House

Kansas City: The Manual Training High School, having both indirect and direct heating, cost in fuel, for the year 1909-10, per cubic foot of space heated and ventilated, 0.273 cents. The Westport High School, having entirely indirect heating, cost in fuel for the same year, per cubic foot of space heated and ventilated, 0.124 cents. Both buildings burn oil in similar boilers.

In the Decatur plant direct radiation is used in all toilets, offices, corridors or rooms with plumbing which might be injured by excessive cold. The advantage of having direct radiation in classrooms is that it tends to keep them warm when the fans are not in operation, provided they are furnished with steam. At Decatur the buildings were arranged in such a manner that it was possible to group the indirect radiation in small chambers near the banks of flues, and thus by gravity air circulation keep the

rooms reasonably warm without any direct radiation when the fans were not in operation. This has proved in practice to work out with remarkable success.

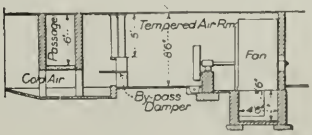
The boiler-house is a fireproof building, containing three high-pressure horizontal tubular boilers of 450 rated horsepower, with standard equipment for bituminous coal. In a room adjoining the boilers are located the feed-water heater, boiler feed pumps, all main operating valves, pressure regulator, etc., and two horizontal turbine-generators, with the accompanying switchboards. The distribution lines for steam, compressed air and electricity center in this room. The generators are for 250-volt direct current, and one of 75 K. W., the other of 50 K. W. capacity. Together they have ample power to carry all of the lights and power in both buildings at one time. In actual practice, however, the peak load never has overtaxed the smaller machine.



Air Intake, Old Building

It is admitted that the turbines are not as economical of steam as would be reciprocating engines, but the fact that the plant is in service practically at no time when heat also is not required, and that, therefore, the electricity is practically a by-product disposes of this argument. The turbines are practically noiseless, have a very long life, require no internal lubrication, thus relieving the boilers of oil, and they occupy very little space. The feed water heater is of only 150 horsepower, being used merely to purify the make-up water, or to supply one boiler when exhausting to the atmosphere in warm weather, when the plaint might be in operation for power or lighting.

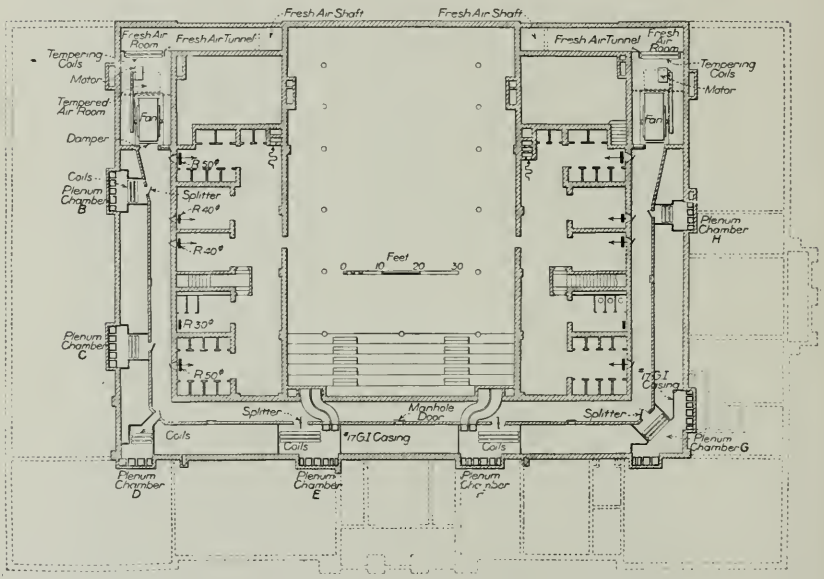
To the old building are run a 7-inch steam line and a 2½-inch wet return. To the new building in a common trench, running about 650 feet and from 4 to 12 feet underground, are carried a 10-inch steam and a 4-inch wet return, in tin-lined Wykoff insulation, and a four part vitrified tile electric conduit, as shown. The main to the new building pitches upward from the boiler-house, and as it is below the receiver, the condensation in it is raised to the receiver by a tilting trap. Proper expansion joints and anchorages are inserted, the former accessible in brick manholes.



Air Passage to Fan, Old Building

In the old high school the supply fan is a special Sirocco wheel driven by a belted 15-horsepower motor, delivering tempered air to horizontally placed reheating coils in plenum chambers directly at the bases of the flues. Fresh air is drawn from the second-story level. All toilet rooms have special closets, with large rear local vent openings, and all urinals are locally vented, being connected by metal ducts with an exhaust fan, which is driven by a direct connected 2½-horsepower motor. New flues of tile supplement the old flues and in the attic are placed cut-off dampers in all vent flues for shutting off the ventilation when the building is not occupied. This is effected by compressed air from the engine-room.

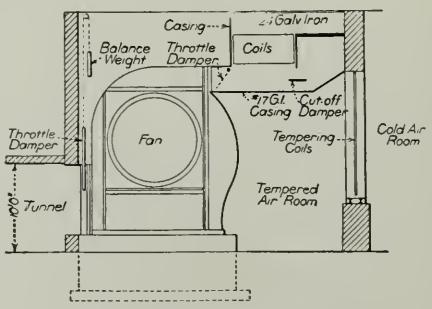
All classrooms have automatic temperature regulation, the thermostats gradually moving mixing dampers in the plenum chambers without curtailing the volume of air, merely changing its temperature as required. Cumulative devices are installed, by means of which the power of the entire plant finally goes to the slowest room to reach 70° F. when warming the building in the morning. On all side wall air supply openings are placed adjustable diffusers, by which the air current may be deflected to any part of each room. There are no vent screens or registers in the new



Basement Plan of New Building showing Heating and Ventilation Scheme

building, the ventilation outlets being finished as far as visible like the rooms, and thus they are swept out every day, preventing the unsightly accumulation of dust, chalk and paper common when screens are used.

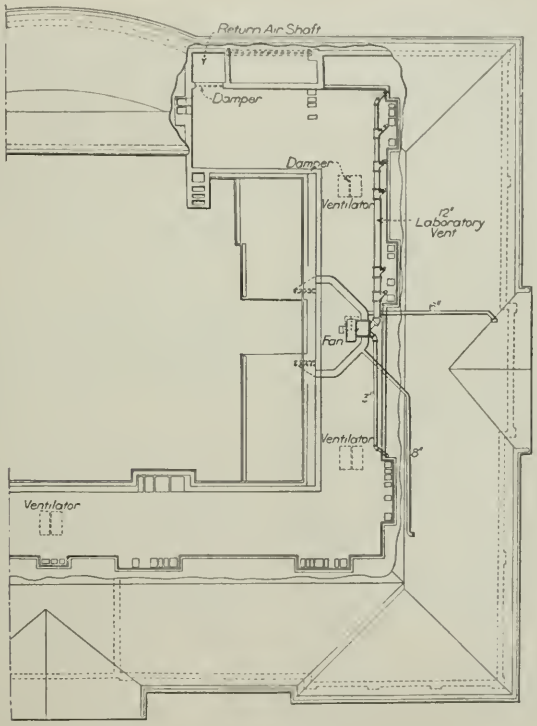
The old school building has an air delivery of 43,000 cubic feet of air per minute, and about 3600 square feet of indirect radiation. The air blown into the corridors finds its way out through the toilet rooms, through the locally vented fixtures, and thus there is



Fan Room Detail, New School Building

always a greater air pressure in the former than in the latter, effectually preventing odors from the toilets anywhere in the building. The toilet ventilation is entirely separate from the room ventilation.

The new high school was naturally an easier and more symmetrical problem, but the description of the apparatus in the old building will very nearly suffice for the new one. The fresh air is drawn from the second



Exhaust and Return Circulation in New Building

floor level, tempered and delivered by the fans into a tunnel which extends under the center of the corridor, around three sides of the building. In this tunnel are nine groups of reheating coils and all of the piping for steam and condensation. The tunnel is of ample size without affecting the balance of the building. The supply fans are Sirocco wheels in double discharge housings propelled by 20-horsepower belted motors. The building receives 120,000 cubic feet of air per minute, and there are about 9000 square feet of indirect radiation.

Exhaust fans for toilet and chemical table ventilation are placed in the attic. Together they have a capacity of 150,000 cubic feet air per minute

and have 8-horsepower in motors. The chemical laboratory ventilation is carried in vitrified tile pipes, and the fan which handles the fumes is of special corrosion resisting construction. A large, tight foul-air chamber is formed in the roof space, from which the foul air escapes through ventilators, equipped with compressed air controlled dampers as described for the old building.

* * *

Tile a Pleasing Decoration for Concrete Surfaces

THE beauty and treatment of concrete surfaces have not received the important study warranted by the nature of the material. A few authorities advocate leaving concrete surfaces just as they are when the rough forms are removed. However meritorious this may be, the majority of architects look upon concrete as a material which from its very nature gives a most extended opportunity in surface decoration and color. Architecture in stone is essentially dependent upon architectural lines—shade and shadow—whereas architecture in brick or concrete is dependent upon the actual treatment of their surfaces for their character and effect.

From this viewpoint, which is that of the majority of architects, any material enriching the surface of a concrete wall without interfering with its structural strength is possible and worthy of consideration. Of stone, brick, pigments and tile, the latter is, undoubtedly, best adaptable because of its beauty and extreme simplicity in application. In France, Italy and America the application of tile to concrete surfaces has been considerably exploited, so that many actual examples exist upon which to base an opinion as to the effect produced.

From these and from the general principles of design involved, it may be seen that extreme accuracy of tile setting, as we know the material in general use, is harmful to fine effects and not to be desired. Concrete, especially for exterior use, should be sufficiently rough and uneven to insure artistic surface modeling when seen from a considerable distance. This necessitates a free and varied treatment of any tile applied to it, both as to setting and as to coloring. The color of the concrete itself, in the main, determines the color scheme of such tiles as are applied to it. Rough and deeply colored tiles are found to blend most easily with the rough surface of the concrete, although it can easily be imagined how certain bands or spots in tile could be both highly colored and finished to bring out accents sought after by the designer.

Especially in country house work the application of tile must be concentrated largely because of the costliness of entirely covering the concrete. As a matter of effect, from an artist's point of view, what a concrete surface needs is contrast with some material which is more refined and decorative than itself. Panels, band courses or scattered designs in tiles, so long as they do not become all-over patterns, seem particularly advisable in this kind of work, as much depends upon concentrating this decoration as does upon an intelligent selection of colors and an artistic placing of the individual tiles. Without doubt there can be no limit to the ways in which tile employed in this way may be treated. Practically any size and shape, any color, any surface, are being manufactured continually, and along with this, molding and special colors and combinations may be obtained, provided the manufacturer considers the amount to be ordered as warranting him to produce special ideas in this way.—John Wynkoop, in the American Contractor.

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

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Australian Competition

Among the San Francisco architects competing for the Australia state capitol design are W. L. Woolett, Maybeck and White and Mr. Grunsky. It is stated that the Chapter of Architects of New South Wales has boycotted the competition because of certain conditions in the program which were not considered ethical.

Los Angeles Chapter Would Abolish Competitions

THE Southern California Chapter of the American Institute of Architects is taking vigorous steps to discourage the holding of architectural competitions throughout the country and to establish a more professional basis for the practice of architecture. The success of the effort is evidenced by the fact that none of the chapter members participated in the recent competition held at San Diego for a Polytechnic high school to be erected in that city. The latest competition to meet with disfavor is one being conducted at San Bernardino to secure plans for a Y. M. C. A. building. The following circular letter was sent to all the chapter members and also to the building committee at San Bernardino:

"Dear Sir:

The A. I. A. sub-committee on competitions of the Southern California Chapter of the American Institute of Architects, having read the program for the competition of a proposed Y. M. C. A. building to be erected in San Bernardino, California, herewith informs all members of the Southern California Chapter A. I. A. that said program does not conform to the Institute code on competitions, and furthermore instructs all members to refrain from taking part in said competition and performing or offering to perform any services whatever in the cause of said competition.

As it is the purpose of the American Institute of Architects through its standing committee on competitions and through the sub-committees of the latter to discourage the practice of architectural competitions throughout the country, or where such becomes necessary to subject these competitions to the terms of the institute code in order to insure justice to all parties concerned, the instructions herein set forth become absolute and mandatory and any member of the Chapter taking part in said competition or offering his services toward the same in any capacity shall be charged with unprofessional conduct and become liable to such action as the board of directors of the Chapter may institute in his particular case.

Yours very truly,
THE COMMITTEE,
Fernand Parmentier, Secretary.

The Chapter has been successful in prevailing upon the Los Angeles Board of Education to select the architects for the new school buildings direct instead of by competition. It seems that a resolution to receive competitive plans for the high school and intermediate schools was passed through a misunderstanding at the meeting of the building committee of the Board of Education held October 19th. The motion was strenuously opposed by Member H. W. Frank, who stated that an open competition was contrary to the code of ethics of the American Institute of Architects and that the members of the Southern California Chapter, A. I. A., which included a large majority of the architects of Los Angeles city would not compete.

Upon investigation the other members of the committee found this information to be correct. The A. I. A. Subcommittee on Competitions, composed of John C. Austin, A. F. Rosenheim and Fernand Parmentier, were present at the meeting. Mr. Rosenheim was called upon to address the board. He outlined the views entertained by the architects toward competitions and the objections thereto and stated that while competitions were once in a while held in small places where there were no architects, the practice had long since been abolished in all progressive cities. Also that the purpose of a competition was to select an architect and not a design, as the accepted plan invariably had to be revised and re-drawn and he thought the members of the board had sufficient acquaintances with the local architects to make the necessary selections without resorting to an old and passing custom. Upon motion the board voted to make the appointments direct.

Words of Praise

The Architect and Engineer receives many congratulatory letters from its subscribers each year and for these the publishers are deeply appreciative. We do not make a practice of publishing these pleasant effusions, feeling that they are not of interest to the average reader. The following from a San Diego architect, however, is so interesting in its trend that an exception is made to our established custom:

Dear Sirs:

Enclosed find my check for $2.00 which please credit to my account and kindly return receipt for same, giving time and date of expiration of subscription that I may list it and know when to pay again. If my subscription lapses, I am not aware of it, for I try to keep even and owe no one. I enjoy your publication very much and appreciate the efforts you are making. Your magazine evidences careful work and artistic results and I wish you success.

I know the labors incident to such a publication having had seven years experience owning and publishing the "Building Budget" from 1883 to 1891 at Chicago. I published the first photo gravure plates of an American Architectural publication which are now so common. I paid 50 cents per square inch for negatives in those days, and 16 cents for line work.

Yours truly,
HENRY LORD GAY,
F. A. I. A.

The Editor Wrote the Head

Architect Sylvain Schnaittacher, secretary of San Francisco Chapter, A. I. A. writes under date of October 30th, as follows:

Architect and Engineer of Cal.,
Monadnock Bldg.,
San Francisco.

Dear Sirs:

I note in the October number of the "Architect and Engineer of California" that you have headed the September minutes of the San Francisco Chapter, A. I. A. "San Francisco Chapter Fails to Endorse World's Fair Commission, by Sylvain Schnaittacher, Secretary."

As the minutes are furnished you without comment, you have no right to couple my name with a title unless the same is headed—"Minutes of

the San Francisco Chapter." It is neither my province nor intention to make any comment on the proceedings.

I would respectfully ask, in justice to myself, that you make a suitable note of explanation in your next issue.

Yours very truly,
SYLVAIN SCHNAITTACHER,
Secretary.

The Portland Auditorium Competition

San Francisco architects, twelve in number, who submitted plans for Portland's $450,000 auditorium, were greatly disappointed that none of the prizes were awarded to a local firm. The best the San Francisco contestants could do was to receive honorable mention. This distinction went to Messrs. Righetti and Headman, and Edward T. Foulkes. The successful plan of the auditorium is shown elsewhere in this issue.

Fine Residence for H. D. Pillsbury

Architects Willis Polk & Co., of San Francisco, have prepared plans for a handsome country residence for Attorney H. D. Pillsbury, to be erected at Burlingame Park, at a probable cost of $75,000. The exterior will be of cement plaster, and the interior will be finished in hardwoods.

Stanford Sorority House

Architect William Binder, of San Jose, has prepared plans for a three-story frame sorority house for the Alpha Omicron Pi Sorority at Stanford University campus, Palo Alto. The building will contain about eighteen rooms, and will cost $12,000.

Personal

Arthur W. Biggers announces the removal of his office from Fort Bragg to Room 821, Santa Marina building, San Francisco.

Architect Arthur H. Memmler, formerly of San Gabriel and well known to the profession in Los Angeles, is now engaged in the active practice of architecture at Monrovia, Cal.

Architects Siebert & Hamilton, San Diego, report the removal of their offices from the McNecce building to suite 14-15 Union Title & Trust building.

Architect Norman F. Marsh, Broadway Central building, Los Angeles, recently returned from a business and pleasure trip to Chicago, Kansas City and St. Louis.

Architect Elmer Gray of Los Angeles, and a resident of Pasadena, has sold his residence on S. Mentor avenue, and will build a new home on El Moline avenue, near Pinehurst Drive, in Oak Knoll, where he has acquired a residence site.

Architect William H. Weeks of San Francisco has moved his home from Watsonville to Palo Alto. Mr. Weeks retains his business interests in Watsonville, however, and will continue to maintain a branch office there.

Architects Havens & Toepke announce the removal of their offices from the Mutual Savings Bank building to rooms 507-9 Maskey building, 46 Kearny street, San Francisco.

L. B. Dutton & Co.

The architectural firm of L. B. Dutton, Chronicle building, San Francisco, will hereafter be known as L. B. Dutton & Co., Mr. Frederick Whitton, formerly vice-president of the Thompson-Starrett Company, having become associated with Mr. Dutton, and will attend to the outside work of the firm in the future. Mr. Whitton is well known in San Francisco, where he was identified with the Thompson-Starrett Company during the time that it maintained offices in the city. When the company ceased its building operations in San Francisco Mr. Whitton was placed in charge of the Chicago office, from which city he returns to the Pacific Coast. Architect Dutton has done splendid work in San Francisco, some of his buildings being the Mechanics Bank building, the Metropolis Bank building, the Sherman & Clay building, the new hotel at Kearny and Sutter streets, now being completed, and the classic structure of Balfour, Guthrie & Co., on California street. Plans are now on the boards for a seven-story class B store and hotel building to be erected at Grant avenue and Bush street, for Mrs. Anna Keesing.

Olmstead Goes to Seattle

John C. Olmsted, of the firm of Olmsted Brothers, of Brookline, Mass., landscape architects, who prepared the plans for Seattle's park and boulevard system, has been authorized by the Seattle Park board to prepare tentative plans for improving Jefferson Park on Beacon hill, and has been engaged to prepare plans for playfields and community parks which will harmonize with the present park system.

Addition to Portland Hotel

Charles Wright and M. C. Dickinson, managers of the Seattle Hotel and the Hotel Oregon at Portland, Oregon, will depart for Chicago and New York this fall to investigate and study the latest modern methods in hotel construction which will enable them to introduce new ideas in the 12-story, class A addition which they propose building to the Hotel Oregon.

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ARCHITECTURAL FEES AND THE HAGGLING OWNER

Architects, more so than any other class of professional men, unless it is engineers, are in these parts constantly harassed by niggardly owners who try to save as much of the proper fee to architects as they can on the assumption that money expended in paying for the preparation of plans is an unnecessary expense if not a neat little hold-up. This class of owners, being told by designing amateurs that it can be arranged so that the "plans will cost you nothing," are misled into an attempt to beat down the just price of a good set of plans when a real architect is consulted.

First-class architectural talent is not cheap, and the owner rarely gets more than he pays for; more often, when he thinks he is getting something for nothing in the way of plans, he is in reality paying a good deal more in some other way than he would have paid for a good set of plans, and when his building is finished he has a structure unsatisfactory in many ways. In going about the selection of an architect owners may well proceed along the same line of mental argument as they would in choosing between a quack doctor and the expert physician who conducts himself in a professional manner.

According to the Southwest Contractor and Manufacturer, Architect Alfred F. Rosenheim of Los Angeles, appreciating how hard pressed is the architect along this line, has written the following half dozen pointed paragraphs which every architect would do well to post conspicuously in his office:

Architects who are able to command a good price always get it, like other people.

Architects who work for small pay do so, not from pure benevolence, as some pretend, nor from anything else that is pure, save pure inability to get more—i. e., out of the owner. They often do get more, however, a good deal more without the owner's knowledge, though it all comes out of his pocket at last.

It always pays in the end to employ first-class talent. As to architects, it pays in the beginning as well.

The loudest complaints about architects are from those who employ the cheaper kind, and the cheaper the kind, the worse the complaint. Those who pay least for their architecture pay most for what they get.

It is poor economy that begins on the architect who makes your plans. Get a thoroughly good plan to start with and your building will have value even if poorly built; but when you set out with a cheap, ill-designed plan, you will never get a decent building from it, no matter how much you may spend—absolutely never. It would be money in your pocket to start with a good plan if it cost 10 or 20 per cent, rather than build from a poor plan, which you could get for nothing.

There is nothing more stupid than to haggle and dicker with a good architect about his commission. Get the best man and pay his price. It is one of the very smallest items in the cost of a building at most, so trifling that, could you save it all, you would not be much ahead, and as you must pay something, the possible saving is too insignificant for you to spend your time disputing over it. Then think of the risk you run in imperiling your whole improvement when you buy cheap architecture from a cheap representative of the profession.

Looks Like an Unholy Alliance

It appears that Mr. Jens Jensen the Chicago landscape artist, and the editor of the Chicago Evening Post, have formed an alliance against the too general invasion of concrete. In a recent pamphlet on "Improving a Small Country Place" Mr. Jensen says, "A walk leading to a garden should never be of any material save brick. It satisfies the artistic sense and invites the footsteps with promises of pleasant vistas beyond the possibilities of any other material. Concrete is harsh, forbidding and commercial by comparison with brick for this particular use."

Dilating upon these words of Mr. Jensen, the Post expresses itself thus: "His words come none too early. Mr. Jensen has been almost too considerate of cement for the small country place. He limits its condemnation to its use in garden walks, but he might have gone further. It is just as bad for other sorts of walks in the country place. The trouble with concrete is that it is so hard. A concrete walk across a lawn is like a heavy load laid upon the soft velvet grass. It will never blend with its surroundings and never soften with age. Nothing so time-defying should be conspicuous about a country place whose chief charm is that it mellows with years."

Superiority of American Concrete Mixers

Writes an engineer in a letter to the publisher:

"In recent visits to parts of New South Wales where dams for irrigation purposes, railways, etc., are under way, I had occasion to notice the popularity of American machines for mixing concrete. One special advantage they are said to have over machines made in England, the only other country from which they seem to be extensively imported, is in their greater convenience where small space is available and where there are natural difficulties in securing large space.

"As an illustration of the local uses of concrete, I might mention the Wallarobba Tunnel, about 1000 feet long on a government railways line now being constructed in New South Wales. This tunnel has given considerable trouble, several serious falls having occurred recently, and it was decided to concret it. Thousands of tons of concret are being utilized, and a concrete mixe was imported from the United States which turns out a truck full of concret every minute or two. Huge molds ar built outside the tunnel, hauled in on the rails, and placed in position, the concrete being then emptied between them and the wall. The molds are so constructed that the engine and trucks can run through without disturbing them in any way."

Twelve-Story Building

Architect Myron Hunt, 1017 Union Trust building, Los Angeles, has prepared working drawings for the twelve-story and basement class A office building to be erected at the northwest corner of Twelfth and Main streets for H. E. Huntington. The construction has been changed from reinforced concrete to steel frame and brick, and the size from 50 x 150 feet to 235 x 115 feet. The building will have three frontages, all of which will be faced with terra cotta or possibly pressed brick and terra cotta. It will be thoroughly modern and fireproof throughout.

Position Wanted

Architectural draftsman and concrete engineer, with nine years' experience, wants position as a superintendent of construction with contractor or architect. Will furnish first-class references. Address "A," 621 Monadnock building, San Francisco.

Municipal and State Engineering

Good Roads—Water—Sewers—Bridges—Fire Protection

Corrugated Metal Culverts*

By CHRIS P. JENSON

A LITTLE city, away back in the hills of New England, has a street superintendent who got his position twenty odd years ago because of patriotic service to his country. During the night following the triumph of a presidential candidate of the party which is in a large majority in that neighborhood, this public-minded citizen who had been assisting in a spirited and spirituous manner in the celebration, got his arm blown off by the Old Civil War cannon which had been doing duty as a noise maker. Since that time the streets and roads of his town have been made and mended under his supervision.

Mr. Smith (as we will call him, because that is not his name) does not believe "in making roads out of a book." He says that river gravel and elbow grease will beat any theories in the world. He builds streets and roads that look just as well as those of any engineer—for two or three years; and then he builds them over again, if he can get the money. There is one street leading up from the center of the town, and having two fairly sharp inclines, where he constructed a handsome crushed stone highway about four years ago. The road-bed was a thing of beauty, and should have been a joy forever; but Mr. Smith neglected to make any provision for the surface water. In the Spring, when the snows are melting, or during the heavy thunder-storms of summer, the water gouges huge holes in the sides, where the gutters should be, rushes across the lower places, and washes tons of fine crushed stone down the cross streets. The lack of proper drainage facilities has ruined the entire work.

The matter of drains and culverts is of the first importance in the work of the municipal engineer. We are all familiar with the advantages and disadvantages of plank, vitrified tile and concrete. But there is a newer material for this purpose which seems to be proving its worth, and which, so far, has not developed any serious defects. I refer to corrugated iron.

Some fifteen years or more ago it was demonstrated that the simple process of corrugating metal added enormously to its strength, and it immediately became possible to make pipes which had to withstand heavy external strains, of much lighter gauges than formerly. The advantages that such pipe possessed in economy, in case of handling and installing, were at once apparent; and a new industry sprang into existence.

However, a difficulty soon appeared which threatened to put an end to this form of construction. Cast iron resists corrosion rather better than most forms of iron and steel, and the action of rust on thick cast iron pipe would not for years result in serious damage; but on fourteen or sixteen gauge sheet iron or steel it was an entirely different matter; and although the metal was protected as far as possible by galvanizing, in many instances the culverts showed themselves to be anything but a permanent improvement. Some of the earlier makers used charcoal iron or other comparatively high class material; but large quantities of steel were marketed and the industry bade fair to go the way of many another good thing which has been ruined by too eager a grasp for immediate profits.

About ten years ago the opinion began to gain ground in the scientific world that iron resists corrosion in proportion to its purity. The idea seemed to be confirmed by the results of a series of careful experiments conducted by the United States Department of Agriculture, which was seeking for the causes of the rapid deterioration of barbed wire, metal roofing and other iron products used largely by the farmer. Since that time each year's experiment has served to more fully establish the genuineness of this discovery, and it has come to be quite generally acknowledged that the superior lasting qualities of the bolts and nails, chains and other iron work of every description of fifty years ago over that of more re-

*Address delivered by the City Engineer of Fresno, California, at Convention of League of California Municipalities held at Santa Barbara, California, October 23d to 28th, 1911.

cent years were due to the greater purity of the iron and steel made before the adoption of the Bessemer process.

During very recent years it has become possible to secure iron of a very high degree of purity. Theory and practice seem to agree that culverts made of this material will have a very long life,—much longer, in fact, than the average cement construction. Large quantities are being installed throughout the country; and where average care and intelligence are used, they seem perfectly successful.

The purity of the metal used, being essential to the success of this form of construction, it is of the greatest importance that specifications are such as to insure the use of the very best metal obtainable.

Until recently the sulphuric acid solution test has been adopted by engineers and chemists as the most satisfactory method of determining the relative anti-corrosion qualities of any two metals. This consists of immersing the test samples, from which all galvanizing has first been removed, in a 25 per cent solution of sulphuric acid at a temperature of 150 degrees Fahrenheit for 3 hours,—the comparative loss in weight in this time determining the difference in quality.

The American Society for testing materials at their meeting during Convention held at Atlantic City in June, however, go strongly on record as not recommending this test. In a comparison of a very pure iron and steel the Sulphuric Acid Solution Test undoubtedly points in the right direction, but in testing a pure iron with an iron while not quite so pure yet approaching purity much more closely than steel, the results of the test are nearly, if not entirely, worthless as a basis of figuring what the metals will do in actual service.

On account of the use of the Sulphuric Acid Solution Test so extensively many manufacturers failing to produce a pure iron have experimented to find other ways of meeting the requirements of the test. Experiments have shown that the addition of copper to steel will dope it so that it will pass the test that has been prescribed in the past. The addition of copper to steel or iron in no way increases the resistance to corrosion, in fact quite the contrary is the case, as copper differs electro-chemically from iron and when subject to corrosive influences an electrolithic action would start between the ions of copper and the ions of iron, one of which is positive and the other negative, and the steel or iron doped in this way in actual service would not last as long as the same iron or steel without the addition of the copper. There are several other ways that have been discovered by which the acid test can be evaded, among these are the dipping of test samples in arsenic or in a solution of potassium bichromate.

This trickery and intentional evasion of the real meaning of the Acid Test has brought up a situation that is rather difficult to meet. At the present time there seems to be but one alternative and this is that the total content of the five principal impurities in the metal (phosphorus, sulphur, carbon, silicon, and manganese) shall not exceed .06 per cent (six hundredths of one per cent), this being the highest standard of purity as yet obtained by the manufacturers of a genuinely pure iron.

[At this point Mr. Jenson showed and explained 14 Stereopticon Slides of Corrugated Metal Culvert Construction as used in the city work in California and continued as follows:]

At this point, I wish to say a word in regard to gauges of part circle culverts. It can be shown beyond a doubt that a part circle culvert of a certain gauge is equally as strong as a full circle of which it forms an arc, if the edges are so reinforced as to absolutely prevent spreading. But in a great majority of cases the part circle is used where there is so little head-room that it can have not more than half the proper depth of covering. This being the case, we should certainly go to the heavier gauges to provide additional strength. This strength increases with the thickness not in arithmetical but in geometrical ratio; and this makes the difference between fourteen gauge and twelve gauge very great indeed. I believe that ten gauge corrugated iron part circles might be used with economy and with perfect success in many instances where railroad iron and reinforced concrete are now employed.

[Again Mr. Jenson called the lantern into use showing Stereopticon Slides illustrating how successfully Corrugated Metal Culverts had been used and closed the address as follows:]

Corrugated culverts are beautifully adapted to certain situations, and ill adapted to others. In general, I would say that, used with intelligence and with ordinary care in installation, they are of valuable assistance in the work of the municipal engineer.

Latest Triumph of Electricity

The Electrical Engineer of London details an interesting account of the latest triumph of electrical art among the far-off Brahmans. Famous Hindu pundets have sat in solemn conclave at Calcutta to determine whether the sanctity of the famous Temple of Kali would be imperiled by the introduction therein of electric light, and after numerous sessions, during which with scholarly thoroughness the whole question was debated

from every point of view, pundets and priests have decided with complete unanimity that the ions will carry with them no contaminating influence. So Kali-Ma, oldest and most potent of goddesses in the Hindu Pantheon, will in future be worshipped in the light of the twentieth century, and the mysterious twilight in which she has dwelt for so many centuries will be dissipated by metal filament lamps.

The Municipal League Convention at Santa Barbara

The recent convention of the League of California Municipalities held at Santa Barbara was one of the largest attended meetings ever held by the League. The importance of the business transacted however, was disappointing and the papers that were read were void of the usual valuable features. The delegates were highly pleased with their entertainment and they report that the exhibition of machinery, etc., used in municipal street work was interesting and doubtless profitable to the concerns that took this opportunity to advertise their goods. It was voted to hold the next convention in Berkeley, Mayor Stitt Wilson outlining the attractions in store for the delegates, in the following words:

"I am mighty glad the next convention is coming to Berkeley, as we are in a position to entertain the delegates in a manner which they will appreciate. We want to show them our city, explain to them our methods of government and show our places of interest.

"One of our strong features is the fact that we are so close to San Francisco where the Panama-Pacific Exposition is to be held, that many of the delegates will have the opportunity of attending the convention and viewing the site at the same time.

"We will immediately begin to lay plans for the convention, and I am confident that President Wheeler of the University of California will give us all the aid we desire.

"We are proud of our school system, which we look upon as among the best in the State, of our streets and of our sewers, our gas and electric light and water systems. We will arrange to show the delegates all our plants and explain our systems to them."

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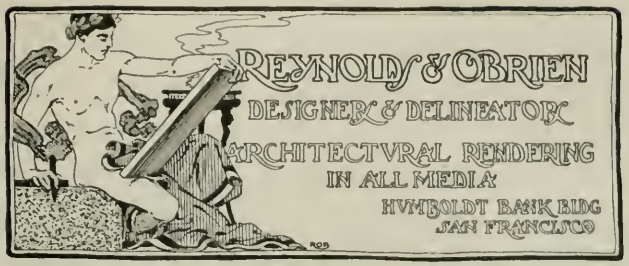

Tar Macadam Roads in Scotland

Writing in the "Daily Consular and Trade Reports," J. N. McCunn, of Glasgow, Scotland, states that roads built with tar macadam in that part of Scotland several years ago have fulfilled all expectations as regards durability and cleanliness. It is noticeable, he writes, that while the ordinary macadam roads have deteriorated under the increasing use of the automobile, the tar macadam roads have remained practically intact.

In regard to sidewalks, he states that the cement or so-called granolithic walks have been found more satisfactory than those of tar macadam. Certain parts of the sidewalk, such as those close to store fronts and at corners, are used more than the other portions, and the effect of this upon tar macadam is to wear the more traveled portions down below the level of the rest. This necessitates patching, which spoils the appearance of the walk. The dripping of water from the eaves of buildings also appears to disintegrate the tar macadam, he states.

Sanitation Works in Japan

Before the opening of the World Exposition to be held in Tokyo in commemoration of the fiftieth anniversary of the crowning of the Mikado, the Japanese authorities decided to install a complete system of modern sanitary sewerage, modelled after that of modern Western cities. As the area of Tokyo is one of the largest of the cities of the world, such a complete scheme of sewerage would require many thousand feet of sewer pipe The mayor of Tokyo, Y. Ozaki, states that approximately $17,000,000 to $20,000,000 will be spent in this improvement, and that the Tokyo system will be composite in nature embodying the most suitable features of many cities. It is probable that the Tokyo system, however, will resemble the Berlin sewerage system in many essential features.

The proper authorities to address regarding the introduction of articles for the sanitation enterprise are K. Inuzuka, Chief of the Bureau of Public Works, Home Department, Tokyo, and the Department of Public Works, City Office, Tokyo.

Before attempting to introduce products into Japan suitable for sanitation of cities, patents should be properly registered according to Japanese law. The Chief of the Patent Bureau at Tokyo will furnish all desired information in this respect.

An Experience Which Produces a Smile

The following experience was related at the Pacific Coast Gas Association Oakland Convention:

A demand was made on the office of a gas company for the installation of a gas meter. The office requested the usual deposit of five dollars from the prospective consumer, who instantly refused the payment of same.

There appears to be a law that meters must be set on request, within a certain time. The company was quite unwilling to open an account with this party unless some guarantee of payment was given, as he was known to be evasive and indifferent to collectors. The party had demanded a meter in writing, so it seemed up to the company. A prepayment meter was set. Then the party took up the question of payment in advance, and held that we could not collect until after the goods were delivered. It now looked like our party had it on us; but not quite, for the prepay was left connected and the company dropped in the first quarter, thus giving the party 25 cents worth of gas. Our party found no legal objections to this method of service.

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HEATING AND LIGHTING

Plumbing and Electrical Work

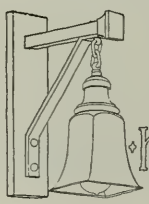
The Illumination and Wiring of Large Office Buildings

Mr. E. G. Burr, an electrical engineer, recently addressed the Province of Quebec Association of Architects in Montreal on "The Illumination and Wiring of Large Office Buildings."

Mr. Burr confined his paper to the illumination of interiors, and stated that the proper solution of problems involved required the heartiest co-operation between the architect, who has in mind the various aesthetic results desired, and the engineer who, with a knowledge of the physical basis of light, is able to produce and direct that light in a proper way and in the cheapest manner possible, having regard to the results desired. Discussing physiological considerations in lighting problems, Mr. Burr laid it down, (1) that beyond a certain illumination intensity the improvement of vision is not commensurate with the increase of illumination; (2) that a high intensity area will not be so evident if the surrounding areas are fairly well illuminated, so that a diffusing globe which in a room with poor general illumination caused considerable discomfort by glare would be quite unnoticed in a brilliantly lighted room. A somewhat similar trouble results from the adoption of indirect lighting from the ceilings in rooms with dark walls, where an annoying glare is experienced, with a distracting tendency to look at this brightly illuminated area. The increase of the general illumination by direct lighting may be a remedy.

In addition to the seeing of objects by light and shade, we also see them by shadow. As architects they were deeply concerned in the proper appearance of objects by their having shadows, and any scheme of illumination which causes these shadows to lose their proper relation to the objects or to become distorted is inadequate, although it must not be forgotten that if desired by proper design objects may be made to assume different but not less beautiful aspects under artificial light. The adoption of modern scientific principles in the design of reflectors has been made possible by careful control of the light flux to obtain identically the same intensities at the different parts of a room as obtain at any given period of the day, and the color even may be closely stimulated, but owing to the fact that the light sources by daylight are of large area and by artificial light are of relatively small area the resulting shadow effects must necessarily be widely different. It must not be forgotten that while two light sources may be combined so as to give identically the same illumination intensity at a given point as is given by one source of higher power, yet in the matter of shadow cast, the results will be entirely different in the two cases.

It would appear that in most cases the readiest solution of the difficulty would be to compromise by providing a certain proportion of light well diffused by re-



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flection and counter reflection from ceiling and wall, such as is the case in daylight illumination, and further provide a certain proportion of light directed from at least two sources located so that at most places in the room some directed light is obtained incident on the object at sufficient angle to give shadows bearing some semblance to those obtaining by daylight.

The design of the illumination for a given building requires the consideration of 1, the light flux; 2, the quality of the light; 3, the direction and diffusion of the light, and in considering these attention must be paid to the following: the character of the illuminant, the intensity of illumination, the system, location of light sources, selection of fixtures, globes, shades, reflectors, glare, specular reflection, contrast, shadow, aesthetic considerations, and efficiency.

Mr. Burr, in his final remarks, alluded to certain architects' specifications in which it was laid down that only two wires should be put in one pipe. This he considered illogical, as there were certain circumstances under which several wires could be safely laid in one pipe.

The Selection of Lighting Fixtures

Margaret Greenleaf writes about the initial cost of lighting fixtures in "Suburban Life," as follows:

"Well-made fixtures are never cheap. Their construction requires expensive materials and expert workmanship. It is a poor investment to install poorly-made fixtures, for they will not hold their finish; the joints will leak, or the wiring short-circuit; and eventually they will have to be overhauled or discarded entirely. Some authorities claim that 5 per cent. of the total cost of the house should go into fixtures—but it rarely does. More often fixtures are regarded as extras, and cut down to the minimum.

"It is bad enough to be obliged to introduce cheap works or fittings into a house that is to be your own home, even if the economy lies below the surface; but to hang economy from your walls and ceilings, to see it every way you turn, to realize that your friends see it also—that is the height of folly.

"A great deal of dissatisfaction in selecting lighting fixtures arises from not starting the process of selecting in time.

"Choose your fixtures when you decide on your plans—make them a part of your plans. Be sure that you specify fixtures which are made by some reliable manufacturer. Then, if any defects develop in the materials or construction, you have the assurance that they will be made good.

"In selecting glassware for your lighting fixtures, be sure to have it conform as nearly as possible to the style of the fixtures. Use opal, frosted or art glass, wherever the light would shine directly into the eyes. Modern incandescent lights are permissible only in a room when the rays are softened and diffused by interposing some translucent screen."

Another Blow to Competitions

There will be no architectural competition to select architects to design the six branch library buildings to be erected in Los Angeles from a fund of $210,000 donated by Andrew Carnegie. Although the library board had intended to hold a competition conforming to the schedule of the American Institute of Architects, a committee from the Southern California Chapter, A. I. A., personally appeared before the board at its November meeting and convinced them that a competition was not necessary or desirable.

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Noisy Plumbing

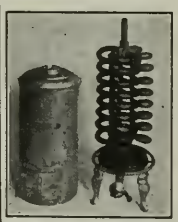
IN the efforts of architects, plumbers and sanitarians to perfect plumbing installations within buildings, they should not lose sight of the fact that no matter how well appointed the work may be, or however perfect the operation of the fixtures might appear, the work is far from being perfect if it is noisy when in use. This feature of plumbing has been too long ignored, and striking evidence of the fact may be observed in most homes, where from any room, or any part of the building, the operation of the water closet in the bath room can be heard. Disagreeable as is this feature of the use of plumbing fixtures is, it is not necessary and can be avoided by co-operation of the plumber, architect and manufacturer.

Most of the noise of plumbing work can be traced to four different causes, any one of which can be easily and inexpensively eliminated. Noisy water closets are chiefly due to the singing and hissing of water flowing through the supply pipe; to noisy ball cocks which close so slowly that a disagreeable hissing noise is evident for some time before the water is shut off; to the way the flushing water strikes the contents of the closet bowl and to the dashing of water against the sides of the soil stack when flowing to the sewer.

The noise due to water flowing through the supply pipes can be eliminated by making the fixture branches sufficiently large so that the velocity through the pipes will be very low. This is where the architect can contribute to the noiselessness of plumbing by specifying large-size water supply pipes.

He can still further improve his work by investigating the merits of closets more closely and not assume that all closets will work equally well. Manufacturers must supply goods to fill the demand already created, and for this purpose must carry an extensive line of goods suitable for all places, conditions and prices. In many buildings the noise of a water closet is not objectionable, so long as it can be had at a cheaper price than the noiseless kinds, and to fill such orders the manufacturers must stand ready. In the better class of work, however, such as private houses and hotels, noiseless closets are preferable, and the architect will do well to look carefully into the merits of the various combinations, so that when in need of noiseless goods he can specify them by the plate number. Knowing the quality of the closets he specifies he should then insist upon getting those fixtures and no other.

The design of water closets influences to a great extent the noiselessness of operation, and here the law of



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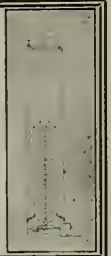

the survival of the fittest should intervene to eliminate in time the less desirable. This probability is the more likely, as, in proportion as closets are more sanitary and satisfactory in other ways, they likewise are less noisy. Siphon-jet water closets, which are the most nearly perfect of any closets yet designed, are by far the least noisy; the water is removed from such closets by siphonic action, induced by a submerged jet, and only sufficient water flows down the sides of the bowls to flush the surface. The bowls are so designed, however, that the chance of being soiled is reduced to the minimum; consequently, a strong flush of water concentrated into a torrent is not needed at any one point to cleanse the bowl. In washout closets, on the other hand, the contents are swept out of the bowl by a large flush of water, concentrated at one point, and as the water leaves the bowl it is dashed against the sides of the closet outlet, churning the water into foam and creating a disagreeable noise. In washdown closets the water is actually beaten out of the bowl by a torrent of water poured in from the tank, and as water cannot be poured onto water without creating a noise, this type of closet is far from being noiseless. It follows, therefore,

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that when the least noisy type of closet is desired a siphon-jet closet should be selected.

The final cause which contributes to the noise of water closets, says a writer in "Modern Sanitation," is the washing of water against the sides of the soil pipe. When this pipe from the bath room passes down a partition along side of a dining room or living room, as it often does in private houses, the noise caused by the discharge of a closet in the bath room becomes perceptible and very disagreeable. Noise from this source can be deadened to a great extent by installing three-inch instead of four-inch soil pipe. In the smaller pipe there is less room for the water to be dashed about in, consequently the impulse which produces the noise will be less; in the second place, the smaller the pipe the less the vibration, and a correspondingly smaller sound wave. The sound produced in a soil stack can be still further reduced by packing it in some non-conductor of sound, and here, again, a three-inch pipe lends itself better than a four-inch pipe to the packing, for with a three-inch pipe there is more room in an ordinary four-inch partition. Filling that section of the partition between the two studding where a soil pipe is concealed with cement or mortar will deaden the sound so that if a three-inch pipe be used little or no noise will be perceptible.

When all the precautions outlined in the foregoing paragraph are complied with there will still remain some little noise in the bath room. This might

[Continued on page 142]

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The fact of the publisher being a manufacturer does not in any manner diminish the value of the treatise, for it is frankly stated in the introduction, that the name of another brand may be substituted for the Neponset brand in any specification. In fact, the experience of this well known manufacturing firm in supplying architects and engineers during the past twenty-five years, adds real value to the data.

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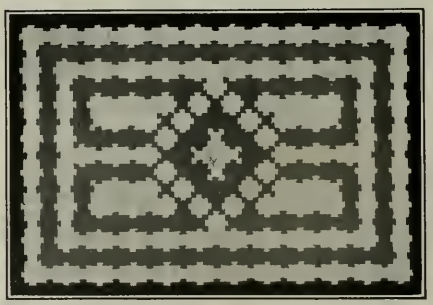

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Dahlstrom Door Company Moves Its Offices

The Dahlstrom Metallic Door Company has moved its San Francisco offices from the Merchants Exchange building to suite 916-20, Rialto building, San Francisco. The Dahlstrom patent hollow sheet metal doors and trim are having a splendid market on the Pacific Coast. One of the largest contracts taken in recent months was the metal trim for the Hearst building in San Francisco.

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Wrought Iron Door Frame and Invisible Hinges

In these days when solid and enduring buildings are fast becoming the rule, in lieu of the temporary structures until recently so generally constructed, the skilled and experienced architect pays attention to every detail, to the end that all parts may harmonize and no weak or objectionable points be presented. Save in the exceptional cases it is only within comparatively recent years that special attention has been paid to the matter of doors really a matter of the most vital importance. It must be admitted that doors, including their forms and the modes of hanging them, have been brought to a higher state of perfection in Europe, Germany particularly, than in this conutry.

J. G. Braun, of Chicago and New York, widely known to architects and builders as carrving a complete and very comprehensive stock of architectural steel and iron goods, is meeting with decided success in introducing in this country a system of wrought iron door frames, including special rolled shapes, that have found great favor in Germany, where great numbers of them have been installed. In an introduction to a fine catalogue, illustrated with a large number of detailed drawings showing the con-

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struction of the frames and the invisible hinges employed in a wide range of applications, the following explanatory announcement is made:

"The modern fireproof and sanitary building of today requires door frames which will not warp nor show cracks in joints, as generally is the case with ordinary iron or wooden frames, caused in most instances by the heat or settling of the building. Another bad feature of the old style frame is that they collect dirt and germs, which is the cause of sickness in a large number of instances.

"With these points in view we beg to introduce herewith, a one-piece welded wrought iron door frame. This frame is constructed scientifically of specially rolled wrought iron in different shapes as shown on the following pages. These frames are, without doubt, better than any other frame on the market today, being absolutely fireproof in construction and, therefore, the most durable for modern use. In Europe they are installed in the following buildings:

"In over 100 up-to-date hospitals and sanitariums. In over 50 bathing establishments and lavatories. In over 80 colleges and schools. In over 40 commercial and industrial buildings. In over 40 army and navy buildings. In over 60 administration and public buildings. In over 25 other different buildings.

"This partial list shows that in about 400 buildings there were over 100,000 frames installed, which shows the progress made in this respect in the short time they have been on the European market. The first-class up-to-date architect demands the best one-piece welded iron door frame."

These rolled wrought iron door frames received the grand prize at the world's fair held in Brussels in 1910 and have received the highest indorsement that architects can give, since large numbers of them in Germany and other European countries, many of them in government employ, have specified them. These frames were especially designed and per-

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fected for modern fireproof and sanitary construction and are peculiarly adapted for hospitals, sanitariums, army and navy, administration, public, commercial and industrial buildings, colleges and schools, bathing establishments, lavatories, warehouses, etc.

Architects will also be interested in the extensive line of high-grade architectural iron and steel goods, covering a very wide range, furnished by Mr. Braun. These include steel mouldings for store fronts, elevator enclosures, plain and ornamental sash bars, square tubing for elevators, elevator enclosures, office railings, etc.

New Architects

At the meeting of the Southern California State Board of Architecture, November 2, certificates to practice architecture were granted to the following.

Charles H. Kysor, 401 Lake street; Ernest H Freese, Alta Vista Apartments; Wm. H A. Werner, 1158 West Thirty-seventh street; David Gunning, 1664 West Twenty-fourth street; Reginald D. Johnson, 415 South Grand avenue, and John E Kunst, 744 South Hope street, all the above being residents of Los Angeles. A certificate was also granted Eugene M. Hoffman, 3367 K street, San Diego, Cal.

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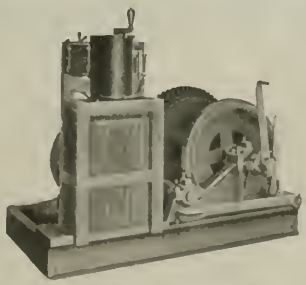

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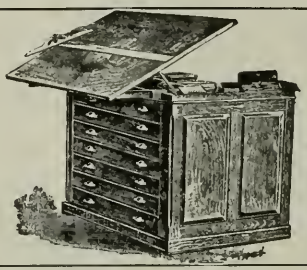

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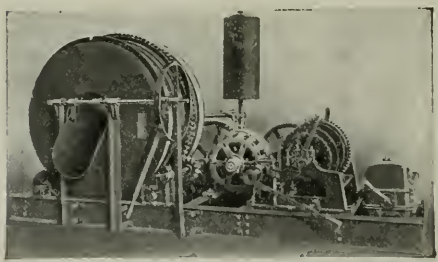

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Sash Fixtures

The Tabor Sash Fixture Company, with main office and factory at 61 Polk street, Newark, N. J., are manufacturers of a line of fixtures for sliding, reversible, removable, vertical and horizontally pivoted and casement sash. This concern also makes automatic casement adjustors and all the various forms of weather strip and hardware specialties for casement and window purposes. A catalogue recently received from this company shows the various ingenious devices that it has placed on the market. The pamphlet may be had on application. Boyd and Moore represent the Tabor Sash Fixture Company in San Francisco.

Hoyt Bros. Complete Good Job

The Santa Rosa Republican prints the following:

"Hoyt Brothers have completed their contract for the construction and equipment of the laundry and heating plant for the county hospital and farm, with the exception of installing the mammoth heating boiler and the dynamo for generating electricity. On Saturday the structure and the plant so far installed were inspected by Architect J. W. Dolliver and W. D. Stewart, engineer for J. E. O'Meara, the well known San Francisco plumber.

"The mammoth boiler that is to be installed will reach this city Monday. It is one hundred horsepower capacity and weighs eighteen tons. Lee Bros. & Company, who have the contract to haul the heavy boiler to the site and place it in position, have found it necessary to import a truck from San Francisco to carry the boiler to the location. None of the trucks in this vicinity could sustain such a weight. The truck for the hauling has been shipped from San Francisco.

"The boiler is what is known as a Scotch boiler and is no ordinary affair It is the largest ever installed in this vicinity and arrangements have been made in the structure for two additional boilers of this size and capacity when the institution has grown to such proportions as would warrant them.

"Hoyt Brothers have made a good record on the structure and their installation of the machinery and equip-

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ment. With this completed Sonoma county now has probably the finest and most modern laundry and heating plant in existence. County Physician S. S. Bogle is entitled to much commendation for securing the structure, for it was through his energetic efforts that it was made possible."

New York Passes Law Compelling Use of Fireproof Booths for Picture Machines

Following precautions taken by the authorities of such states as Massachusetts, New Hampshire, Pennsylvania Maine, Vermont, Connecticut, Rhode Island and others, who have enacted laws compelling the use of a fireproof booth or enclosure to eliminate the possibility of fire in case the highly inflammable celluloid film used in moving picture machines catches fire, the State of New York amended Chapter 756, effective July 24th, 1911, to read:

"No cinematograph or any other apparatus for projecting moving pictures, which apparatus uses combustible films of more than ten inches in length, shall be set up for use or used in any building place of public assemblage or entertainment, unless such apparatus for the projecting of moving pictures shall be enclosed therein in a booth or inclosure constructed of iron framework covered or lined with asbestos board, or with some equally strong and fire-resisting material, and unless such booth shall have been constructed as provided in Section 210 of this article and the certificate in Section 211 of this article shall have been issued to the owner or lessee of the premises wherein such booth is situated."

One of the first to see the need of this protection for moving picture machines and films and to build booths to conform to the requirements of the insurance authorities and inspection departments of the States which passed such laws was the H. W. Johns-Manville Co., New York, whose booths have been tested also and approved by the New York City building department. These booths are known in the trade as "J-M Transite Asbestos Wood Booths."

The framework of these booths is of heavy angle irons or tees on which the asbestos wood panels are mounted, and when set up, the booth can be painted and decorated in keeping with any style of interior finish.

How to Treat Concrete Floors

Of the many attractive volumes that have come to the editor for review, none is more unique or interesting than the little pocket edition of Glidden's "How to Treat Concrete Floors." Bound in an olive green suede cover with gold decorations, the book is a little gem and its contents are as valuable and interesting as the cover is attractive and unique. While the text is frankly an advertisement of Glidden products, it has been carefully written with the object in view of presenting to architects and engineers, practical solutions of their problems concerning the treatment of concrete floors, both as regards their maintenance and decoration.

"How to Treat Concrete Floors," defines the problems to be solved and treats of their solution in a logical and orderly manner. The matter of maintenance and protection are presented as being of prime importance while hygiene and decorative effects are given due consideration.

The fact that the nature of the surface to be treated varies according to conditions is demonstrated and the means by which the degree of protection desired may be determined is clearly defined. In

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this connection the reliability of Glidden's Concrete Floor Dressing under service conditions is described and general specifications are appended. The treatment of low temperature, or winter floors, as contrasted with the treatment of high temperature, or summer floors, is explained in a brief and concise manner and the whole book, though of an advertising nature, is well calculated to be of real value to all who are interested in concrete floors and their treatment.

The Glidden Varnish Company of Cleveland, Ohio, will mail free to any architect or engineer a copy of the book upon application.

Establishes Its Largest Branch on the Pacific Coast

Of importance to the Pacific Coast, is the step taken by the Lansing Company (formerly the Lansing Wheelbarrow Company), in establishing its largest branch warehouse in San Francisco. Soon after the fire the company felt compelled, by reason of the demand for its goods, to open a San Francisco branch. At that time they found difficulty in securing a desirable permanent location, so a short-term lease was taken of the property at 787-9 Folsom street.

Business increased so rapidly that additional space outside had to be acquired, but even this proved inadequate. Recently the officials from the Eastern general offices made a western visit for the purpose of considering the Pacific Coast situation. So favorable was the impression gained that the purchase of real estate was immediately sought and consummated.

Because of the immediate urgent need of multiplied space, a contract has been awarded to Hoyt Bros., Monadnock building, San Francisco, for the erection of a five-story reinforced concrete building, from plans and drawings by the owners, and work has begun and will be rushed to completion. It is hoped by the Lansing Company to occupy the new building at Nos. 338-348 Brannan street some time in February, 1912.

The catalogue of this company at once reveals the large line of goods it manufactures. To care for the large trade the company has several carloads of goods en route and arriving, and the local manager has placed orders with the factory for ten carloads to arrive on completion of the building.

The general offices are in Lansing, Mich., with other branches at New York, Philadelphia, Chicago, Kansas City, Minneapolis, St. Paul, and Parkin, Ark. The San Francisco store will soon inaugurate a system of doing their own billing instead of having it done at general Eastern offices.

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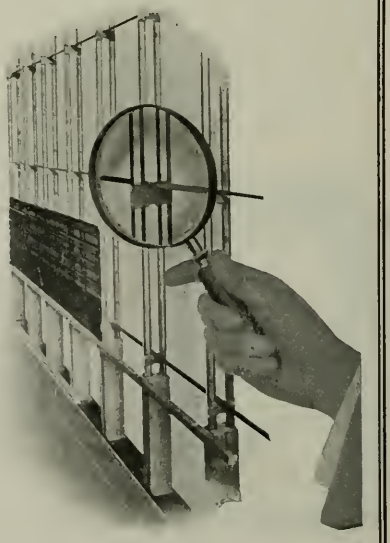

Our New House: How We Plan to Build It

The thought of sometimes owning one's own little home is probably cherished at one time or another by two-thirds of our American families. While all do not live to see their fond hopes realized, much pleasure is nevertheless taken in the preliminary planning, the gathering of ideas and the notation of same in a book where they will be handy reference. It has remained for the David Williams Company of 239 West 39th street, New York, to supply such a book, a copy of which is acknowledged by the editor of the Architect and Engineer. The author, Louis Perrett, has surely hit upon something entirely new and there is no doubt it will find favor with the prospective home builder. It is a book for sketches and suggestions, from the excavating of the ground for a home on through the various departments to the completed building. The pages are divided into appropriate headings beneath which the owner is expected to jot down his ideas or the suggestions of friends. Then when he is ready to build, he has the facts before him in proper order, to be discussed with his architect and builder. The book contains 160 pages and is printed in two colors on gray paper, 6 by 10 inches, and handsomely and durably bound in gray cloth with titles both front and back stamped in gold. The volume is sold for $1.50 postpaid and should make a very attractive Christmas present.

Ferro-inclave

Ferro-inclave, made by the Brown Hoisting Machinery Company, of Cleveland, Ohio, is a sheet of steel with dovetail corrugations permitting the sheets to fit over one another and forming a tight joint without destroying the corrugations.

The makers recommend its use as a reinforcement where great strength in construction is necessary.

A pamphlet recently issued describes and illustrates the many advantages claimed for this reinforcement which the makers desire to bring to the attention of architects.

Los Angeles Apartment House

Architect Frederick Noonan, formerly of San Francisco and now of Los Angeles, has been commissioned to prepare plans for a three-story and basement class C apartment house to be erected at the southwest corner of Union avenue and Washington streets for Robert A. Fowler, 543 South Broadway. The construction will be of sufficient strength to permit the addition of two more stories. The building will be 134 x 109 feet, built in the shape of a letter U,

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with a central court containing a garden, fountain, etc. There will be 144 rooms arranged in apartments of two, three, four and five rooms each. It will have concrete foundation and basement, pressed brick facing and terra cotta trim on both frontages and in the court, plate glass windows, composition roof, fire escapes, mahogany interior trim, mahogany doors and wainscot in the halls, hardwood floors, tile bath room floors, wall beds, steam heat, vacuum cleaning system, telephone and electric light wiring, circulating ice water system, provision for elevator, amusement room and ball room on the roof, locker rooms and shower baths in the basement. The estimated cost is $85,000.

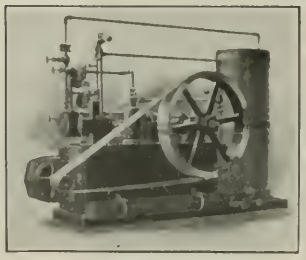
Fireproof Doors and Trim

The advent of the "Dahlstrom" hollow metal doors and trim marked a new era in fireproof building construction. It is now possible to make the interiors of buildings absolutely fireproof, without in the least sacrificing that "classy" and artistic finish desired by architects and owners alike in their best buildings. The "Dahlstrom" hollow metal doors, partitions, windows and trim are not dependent on an unreliable wood core for support. They are made of heavy gauge steel plates, which, with the peculiar patented construction, makes this product entirely safe, rigid and self-supporting. Reinforcements are provided for all hardware, which is properly fitted in the process of manufacture before the finish is applied. The quality of the Dahlstrom product is unexcelled and their mehods of construction are constantly being perfected. Dahlstrom doors are the lightest yet the strongest of any. They use only the best, specially prepared steel, and by the use of both the acetylene-oxygen and the electric processes of welding, all work is made entirely seamless. These doors have stood not only the test of laboratories and received the highest indorsements, but also actual fires and heavy usage and have thoroughly proven their worth.

Detroit Graphite Company Opens San Francisco Office

The Detroit Graphite Company, paint makers, of Detroit, Michigan, whose agency for the past year or so has been handled by C. W. Pike & Co. of San Francisco, have opened an office of their own in the Foxcroft building, and placed in charge Mr. H. H. James, who formerly sold their product for C. W. Pike & Co.

Both Mr. James and the Detroit Graphite Co are well known to the architects and engineers of this coast, and a successful business future is assured them both.



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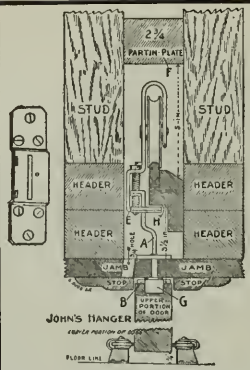

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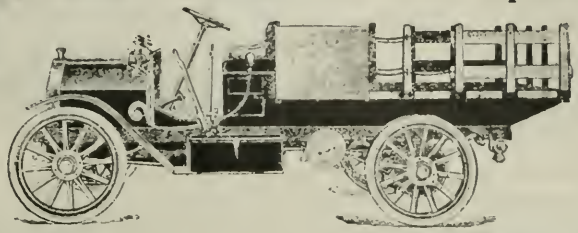

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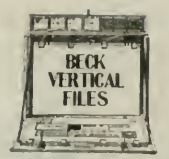

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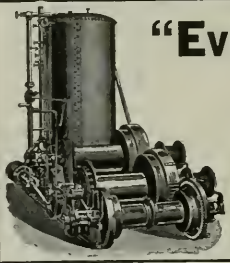

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The Phila. Evening Item.

SIXTY-FOURTH YEAR.

"The Paper of the People."

Philadelphia, Pa., July 10, 1911.

Progress in Fire Protection

We are in receipt of a kind letter from the Rochester (N. Y.) Chamber of Commerce, by its President, Albert B. Eastwood, in which we are assured of the appreciation by that body "of your splendid editorial, entitled, 'Public Rising to Prevent Fires.'" • • • That the "Rochester Chamber of Commerce is by that editorial stimulated to carry on this work aggressively, not promiscuously, for the country at large, but for the results to be obtained within the limits of the City of Rochester.

"If our example will stimulate other communities to like activity, this stupendous fire waste can be somewhat checked."

We reproduce that letter in part as an instance of a popular uprising among the business interests all over the country to reduce our enormous fire losses, losses which the present year shows to be largely on the increase.

In connection with this subject we have just received, with the personal compliments of its author, F. W. Fitzpatrick, consulting architect, formerly of United States Service, etc., entitled, "Fire and Fire Losses," a handsome work most carefully prepared for instructive purposes.

Mr. Fitzpatrick says fire is the most dreaded of devastators; "it has been used in war for discharging weapons, and in its crude state, so to speak, as an auxiliary which ranks with carnage and rapine.

"In the form of conflagrations, it has supplied some of the most spectacular and memorable and saddest events in history."

Mr. Fitzpatrick very properly puts the weight of his argument for fire prevention upon the fire-resisting construction of buildings.

In connection with that conclusion, which is practically unanimous among those who have made a study of the matter, we recently gave considerable time to an examination of the recent development of using drawn steel in the place of the interior wood work of dwelling and office buildings, and for interior furniture in both classes of buildings, and for interior railway car work.

To be frank about it, we were greatly astonished at the BEAUTY, STYLE AND FINISH OF THIS STEEL INTERIOR WORK, which is now in use aboard steamships for stateroom and other interior work, as well as in the other cases above mentioned.

This interior steel work cannot be detected by visible inspecton. It so closely resembles the finest wood work, both in design, grain, rounded edges, and inlaid ornamentations, that the occupier of a room so fitted up would not suspect, were he not told, that he was not surrounded by the finest wood work producible.

Then, too, this steel interior work is used for practically every purpose—flooring excepted—fine or plain woods are used for.

Of course, it is fireproof, will not burn, and overcomes that complaint of fireproof building constructors who have said: "How can we make a building fireproof when its occupants fill it up with inflammable furniture?"

For window frames, doors and frames, wainscotting, walls and ceiling, and all interior work, this DRAWN STEEL IS MADE AS BEAUTIFUL AS THE FINEST CABINET FINISH OF THE BEST TROPICAL WOODS. And far more beautiful artistic work is possible to shaping this steel than could be worked out in wood.

In fact, artistic designs in this steel, as beautiful to-day as they are, in study and practice are in their infancy.

The preceding excerpt can give but the faintest idea of the beauty and utility of the Dahlstrom Products.

We are the originators of this class of work and have developed drawn steel construction to its highest efficiency. The Dahlstrom Products are to be found in the structures exemplifying "fireproof reality" such as The Singer Building, New York; William Hunter High School, Philadelphia; First National Bank Building, Denver; Amicable Life Insurance Building, Waco, Texas; U. S. Battleships Florida and Utah, and so on.

"Buildings as They Should Be"

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To the interested a copy free for 6 cents postage.

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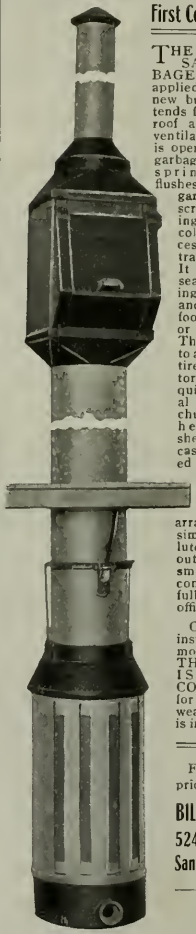

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We would like to place tangible proof of the good SERVICE of Bridgeport Standard Wood Finishes in your hands.

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We will be very glad to mail you on request a neat compact case of sample panels showing numerous wood finishes in new and staple effects. You will find them useful and PRACTICAL.

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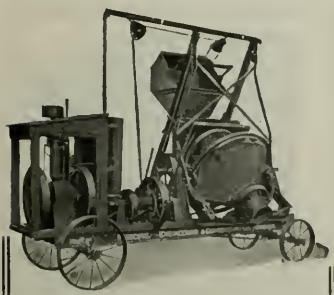

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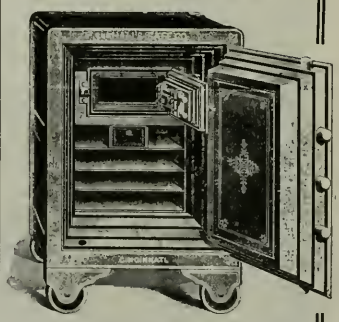
Noisy Plumbing

[Continued from page 112]

not be more than the splashing of a bather in the bath tub, but this sound can be deadened by making the walls surrounding a bath room sound proof and by hanging sound-proof doors in the door openings.

Another source of noise in plumbing is due to water hammer in pipes, or to vibration of loose parts of a faucet when water is running. The remedies for these noises are so obvious that the plumber whose work it is can easily eliminate the cause. Water hammer can be avoided by using slow-closing cocks and faucets and placing air chambers wherever they are required in the system. It may also be reduced to the minimum by installing such large supply pipes that the velocity will be reduced to a minimum. Noise due to loose parts of a faucet can be easily remedied by making tight the loose parts.

In conclusion it may be said that the architect who designs and the plumber who installs noiseless plumbing will give far better satisfaction to their clients than those who design and install noisy plumbing, and it is pleased clients who advertise a business and bring return orders to the office.—The Construction Record.



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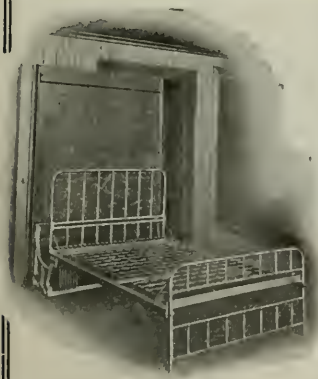

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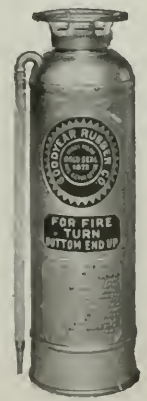

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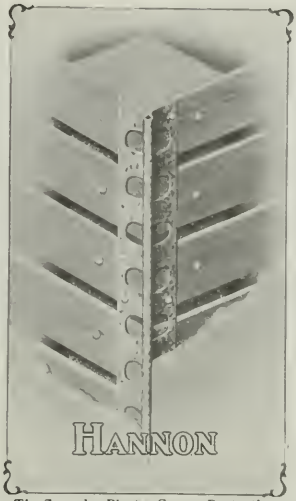

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The very act of cleaning a room with a broom and duster involves **eight separate** operations: 1. The sweeping itself, which is a slow, laborious task; 2. Moving furniture about; 3. Taking out the rugs and beating them; 4. Gathering the dust together into a dust pan after it has been swept up; 5. Opening the windows during the sweeping process—this means draught all over the house, and in winter, loss of heat which costs money to produce; 6. Dusting over the furniture with a soft cloth or duster; 7. Climbing step-ladders for high dusting; 8. Shutting the windows and bringing the room back to its normal temperature. With "RICHMOND" Vacuum Cleaning, there is but one operation—sweeping. No opening of windows; no wielding brooms; no rug beating; no dust-collecting; no dusting. And "RICHMOND" Cleaning being so thorough, it is not necessary to do the work so often as with a broom.

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Housecleaning is a **semi-annual tax** which those without vacuum cleaning must **always pay.** First there is the cost of outside labor brought in; and considerable though this be, it is small when compared to the **damage** loss which housecleaning always means. The carpet which is taken up never looks so well when it is relaid. The furniture which is scuffed and scarred and scratched in moving is permanently lessened in value as well as in beauty. The pictures and mirrors that are broken, as some always are, mean a cash outlay. There is no article of household furniture—nothing in the house from the wall paper to the trim and fixtures that does not suffer a positive money loss at the time of spring and fall housecleaning.

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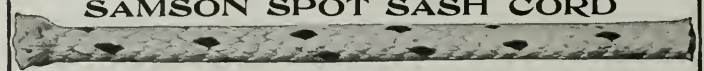
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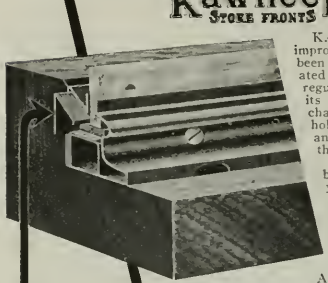

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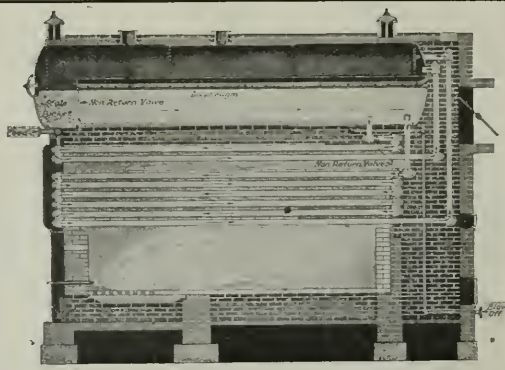

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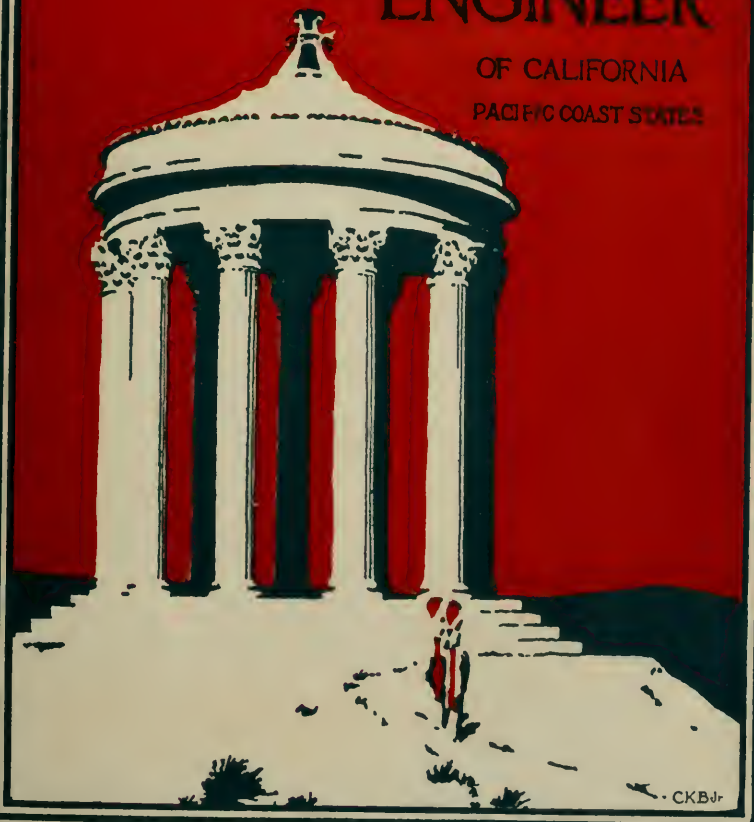

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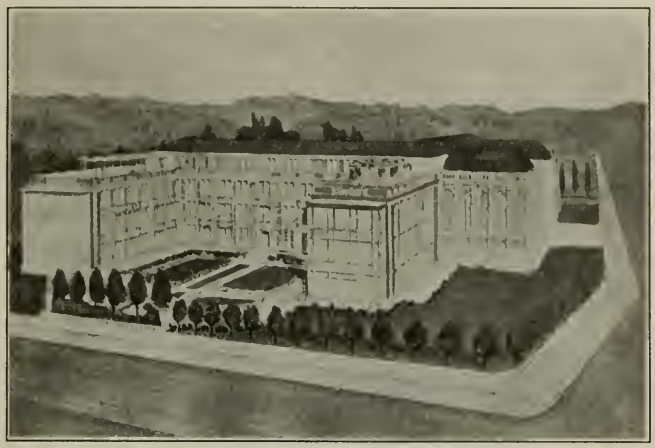

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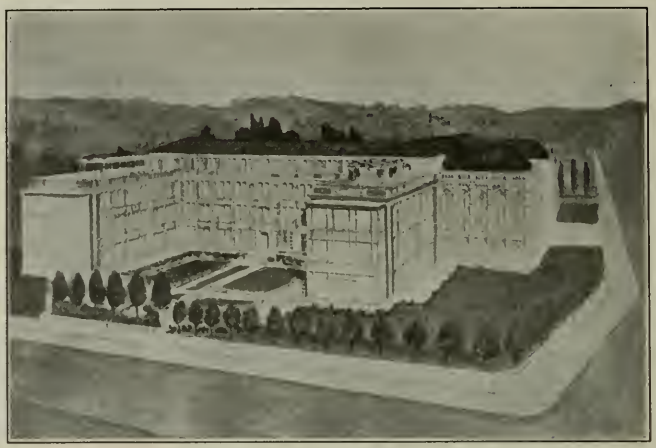

Main Building, St. Luke's Hospital, San Francisco. Lewis P. Hobart, Architect

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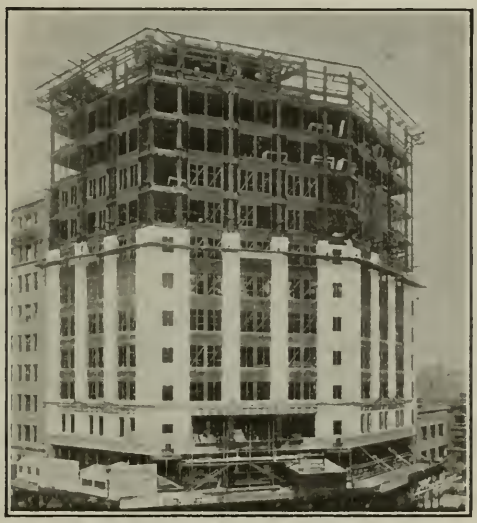

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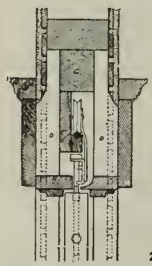

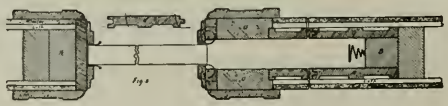

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CEMENT FLOOR COATING
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing agents on page 123.]
Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.
Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

CEMENT TESTS
Robert W. Hunt & Co., 418 Montgomery St., S. F.
Smith, Emery & Co....651 Howard St., S. F.

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Robert W. Hunt & Co., 418 Montgomery Street, San Francisco
Smith, Emery & Co., 651 Howard St., S. F.

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Parrott & Co.....320 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.

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Parrott & Co.....320 California St., S. F.
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White Bros., Cor. Fifth and Brannan Sts., S. F.

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Pittsburg Water Heater, sold by Thos. Thieben & Co.....585 Mission St., S. F.

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Mangrum & Otter, Inc., 507 Mission St., S. F.
Pacific Blower & Heating Co., 17th St., betw. Mission and Valencia, S. F.
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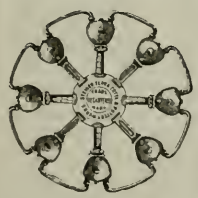

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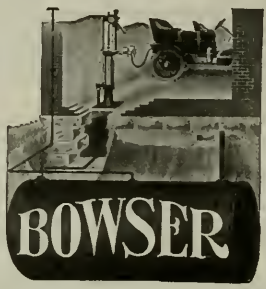

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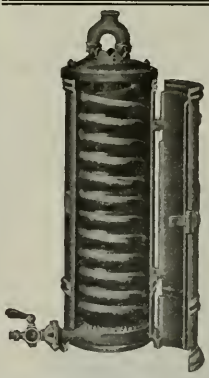

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Fire Chief CROKER says of The DAHLSTROM PRODUCTS —

At the International Municipal Congress and Exposition, Chicago, September 29th, *Edward F. Croker, Ex-Chief of New York City's Fire Department, who spent 27 years in the service, 12 years as chief, said:*

"IF we are to better conditions, we must realize that 'fireproof' is not 'fireproof' as it is understood today. The literal definition remains, but many crimes have been committed in its name. . . . . There is but one principle to fireproof construction irrespective of the kind of structure. To have fireproof buildings, architects and owners must throw aside precedent and eliminate the use of combustible and semi-combustible materials in their construction.

" . . . . If there were still an absolute necessity for its use, if it could not be replaced with steel, as it has been in many modern constructions, it would then be well to attempt to conceive of something better. I am opposed to the use of wood in any form in fireproof buildings and the law ought not to permit its use.

" . . . . To me there is a fascination about steel interiors. It constantly emphasizes the absurdity of fire-fighting, for how can fires rage if they have nothing to feed upon?"

Ex-Fire Chief Croker's address has been done in booklet form. Copies may be had for the asking. "Buildings As They Should Be" clearly describes the elimination of all combustible materials in buildings. A copy may be had for the asking. Send for it.

Interviewed, Ex-Fire Chief Croker said: "You are at perfect liberty to use my talk partially or entirely and apply it to your products. I have watched your development since you first originated cold drawn steel interiors with great interest. I have nothing more to say. My address, and the fact that my private residence will be equipped throughout with The Dahlstrom Products is as strong a recommendation as I can make."

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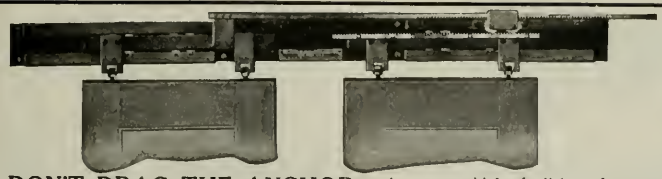

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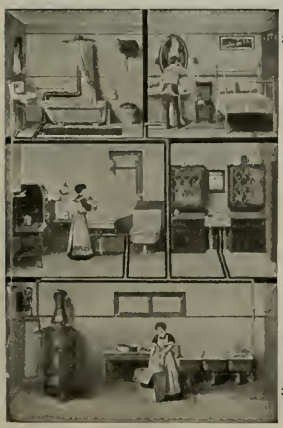

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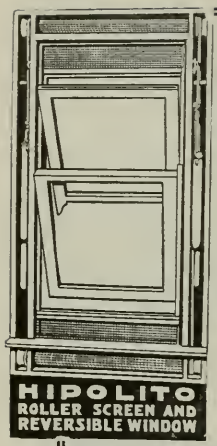

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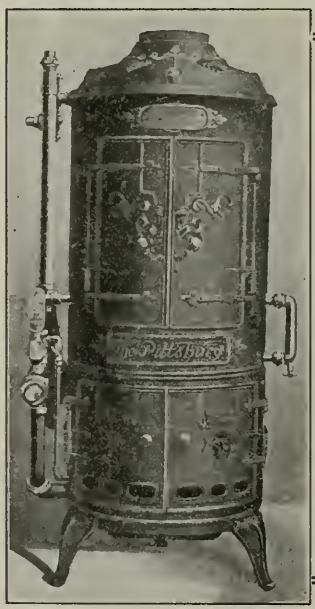

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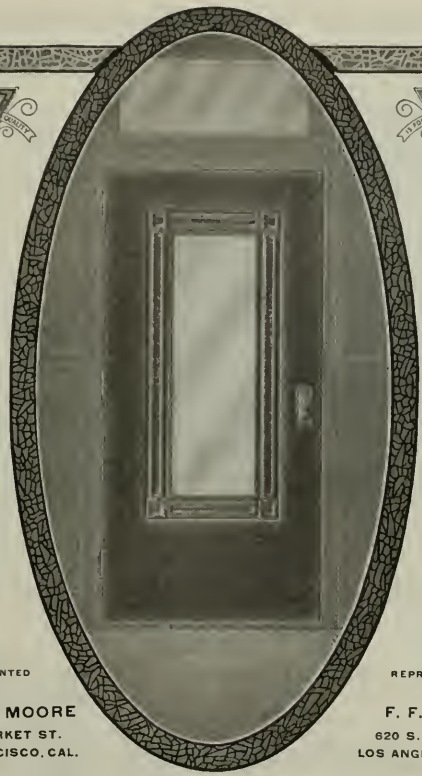

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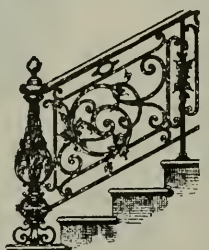

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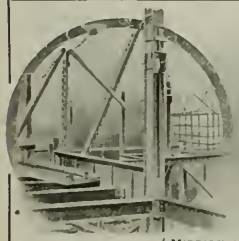

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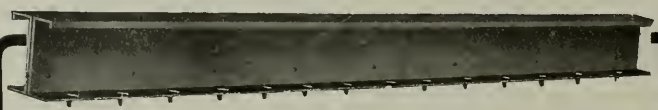

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"STANFORD COURT," NOB HILL, SAN FRANCISCO

Creighton Withers, Architect

Frontispiece,
The Architect and Engineer of California,
December, 1911

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THE

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VOL. XXVII. DECEMBER, 1911. No. 2.

"Stanford Court" California's Largest Apartment House

"STANFORD Court," a fireproof reinforced concrete building now being built on the old Stanford property on the southwest corner of Powell and California streets, San Francisco, will be the largest apartment building of its kind in California, if not on the Pacific Coast. It will have eight stories and basement above the sidewalk and a sub-basement under the south and east portions of the building. The foundations of all the columns supporting the building have been carried down to the solid bed rock, thus giving it the best and strongest foundation known.

The building will be a rectangle in shape—168 feet front on California street by 214 feet deep with a court in the center, 91 by 137 feet. As it is set 19 feet from the west line of the lot, 50 feet from Pine street and 19 feet from Powell street, all the rooms will be bright and sunny.

There will be but one entrance and that from California street through a grand archway leading to the court around which are the various entrances to the apartments. These entrances lead to the elevators which are six in number and each elevator serves but two apartments on each floor, thus doing away with corridors and public halls and giving the tenant the greatest privacy possible.

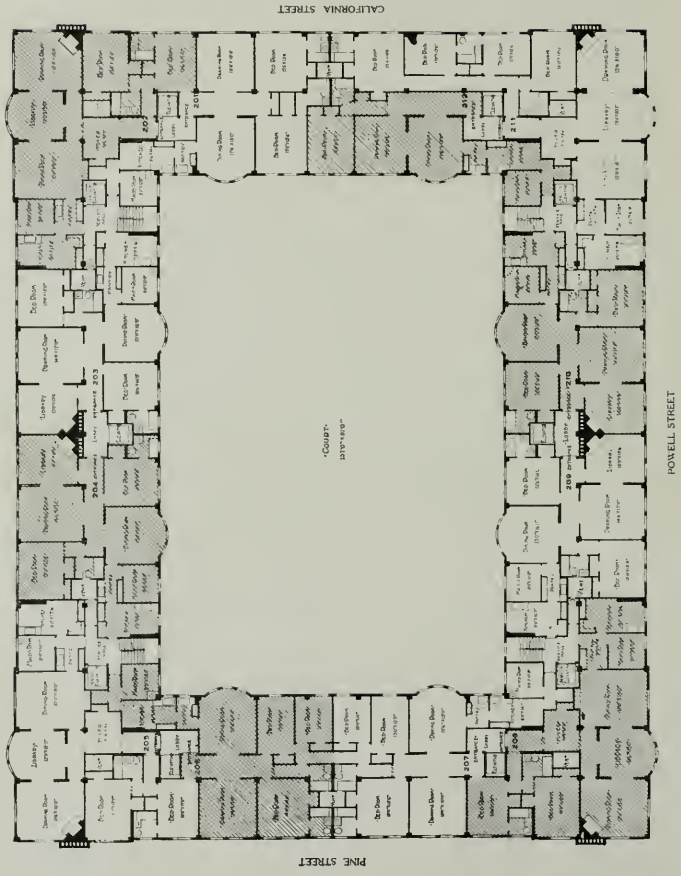
The court is intended to be the feature of the building. The entrances to the apartments are to be ornamental and the walls of the court are to be finished similar to the exterior. There will be a fountain in the center with trees and shrubbery to make it attractive.

There will be four service elevators serving three apartments on each floor with a service stairway adjacent running from basement to the roof. These stairs will be built entirely of reinforced concrete and the doors leading to the service halls on all floors will be of metal with self closing appliances, thus making them an absolutely safe means of escape in case of fire.

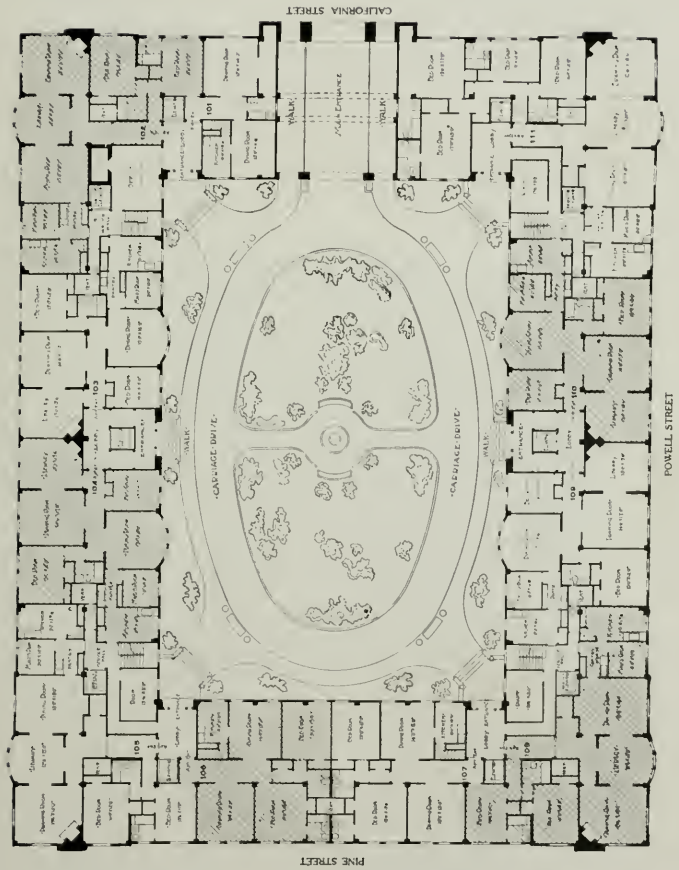
On the first floor a passage leads from each service hall to the lobby so that in case a passenger elevator breaks down the tenants can have access without trouble to the service elevator and so reach their apartments without having to climb stairs.

On the west side of the building will be a driveway leading down to the basement floor in which will be a large garage for the use of the tenants, the tradesmen's entrance with offices, etc., extra bedrooms for servants with lavatories, kitchen, servants dining room and laundry.

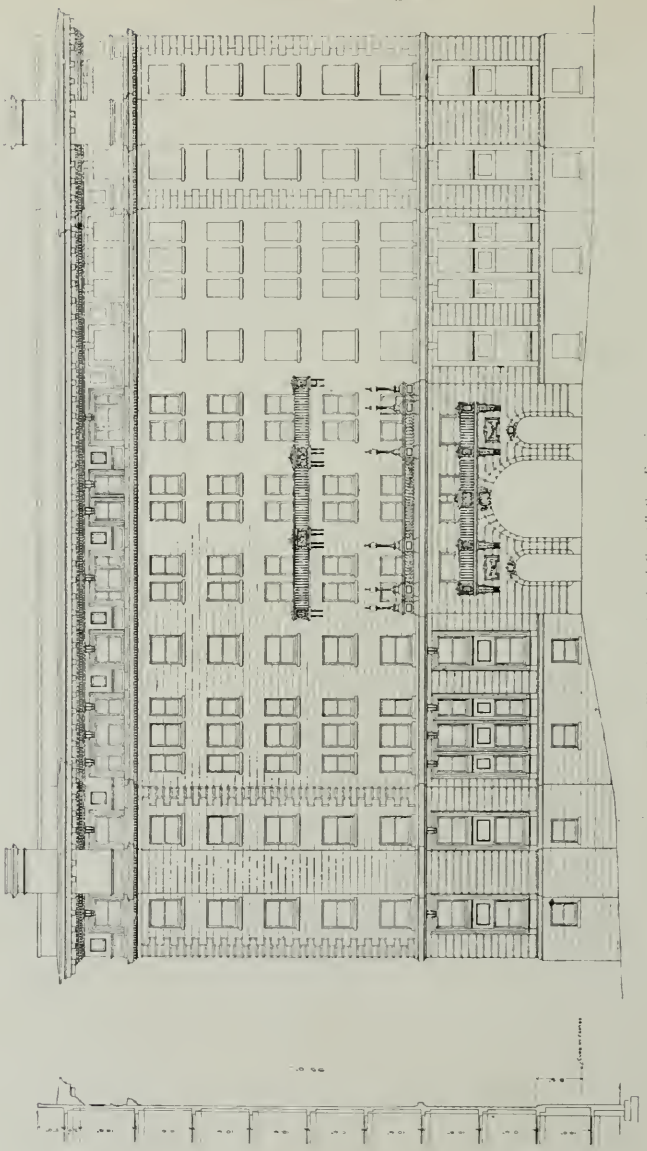
In the sub-basement will be the oriental quarters, store rooms for the use of tenants, machinery rooms, etc.



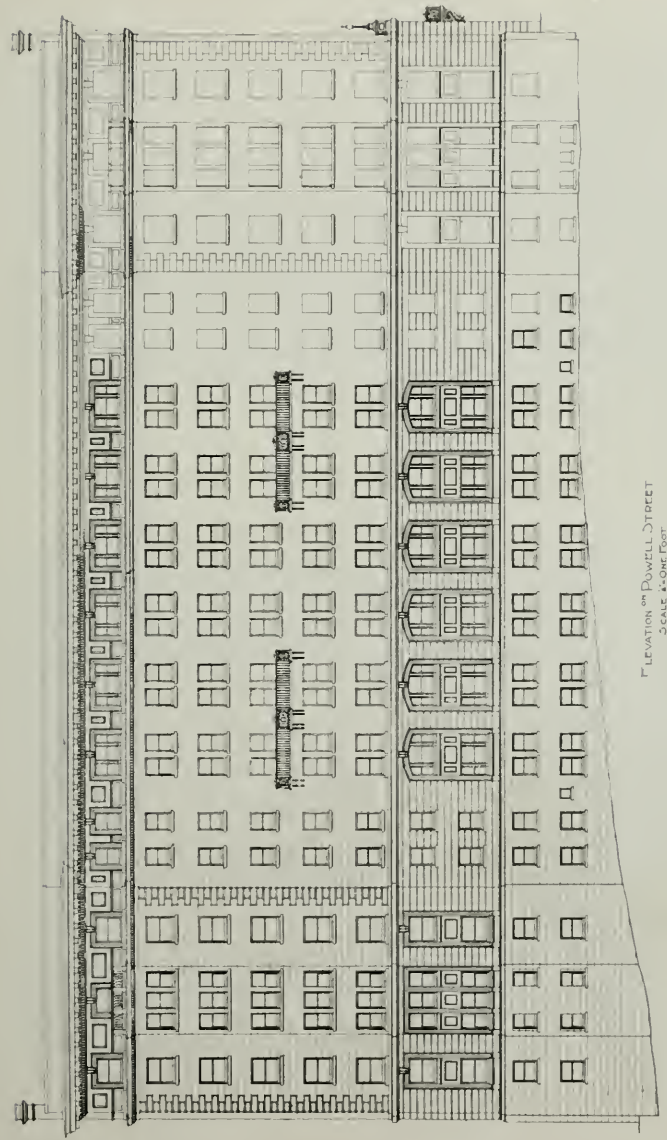
Plan of Second and Upper Floors, "Stanford Court," San Francisco



Plan of Ground Floor and Court Drive, "Stanford Court," San Francisco



Front Elevation, "Stanford Court," San Francisco



ELEVATION ON POWELL STREET
SCALE 1/8 ONE FOOT

Powell Street Elevation, "Stanford Court," San Francisco

On the first floor will be the office of the building which will contain a large vault with boxes for the use of the tenants, and eleven apartments. On all the other floors will be twelve apartments, ranging from five to ten rooms each. Many of the apartments are so arranged that they can be made larger or smaller, as needed, by the shifting of a door, thus enabling all requirements to be met.

All the apartments but the corner ones extend across the building so that light and air can be had from every side. Nearly every bedroom on each floor has a private bath room which will be fitted with porcelain bath tubs, pedestal lavatories and toilets of the latest design. The walls will be wainscoted with opaque glass, the floors tiled with marble and the doors fitted with plate mirrors. Besides hot and cold fresh water each bath will be supplied with hot and cold salt water.

The kitchens and pantries will be tiled and equipped with the best appliances possible so that the servants will have every convenience at their hands. The living rooms and masters' bedrooms will be finished in white enamel with mahogany doors and the walls will be decorated with handsome papers and all floors will be of polished hardwood.

The building will be equipped with a pneumatic cleaning device, intercommunicating telephones, etc.

The exterior of the building, including the court, will be finished in cement of a light cream color. The building is being built by Mr. L. H. Sly and is expected to be completed by September 1st, 1912.

* * *

Reinforced Concrete as a Sound Deadener

THE charge has been made against reinforced concrete that it transmits sound too readily, and is therefore not adaptable to dwellings, halls, etc. The sound waves penetrating into a solid body are propagated with less loss, the more homogeneous a body is. The various degrees of sonorousness are only functions of the surface hardness of the body which receives the sound waves. Thus wood transmits sound less than iron, because it reacts less to the activity of the shock as the sound waves strike it. The same applies to reinforced concrete. It is much less sonorous than iron, and reinforced concrete reacts infinitely less to the action of the sound waves than any other material. Concrete is of such a heterogeneous composition that it does not take up the sound waves that strike it, and therefore, does not send them along as iron does. If there are any transmitted, they are transmitted in such a bad form that they have no influence at all upon the acoustic qualities of a room. Perfect deadness to sound can be obtained much more easily in a concrete building than in an iron one. It is only necessary to interpose a very thin body between the concrete and the sound to get this condition. A simple linoleum placed upon the floor of a concrete building is sufficient to insure perfect deadness to sound. This is impossible to obtain in a frame structure. However, care must be taken to avoid cement or brick floors placed directly over reinforced concrete floor-beams, for the change of medium in this case will transmit sound and counteract the good effects of the concrete. There is no reinforced concrete construction that cannot be made sound-proof with a little care and thought. On the other hand, it is impossible to reach complete deadness to sound in construction where the metal is the predominating element. Iron transmits sound so perfectly that it is next to impossible to reach the desired effect as can be done in reinforced concrete.—Le Ciment Armee.

Quaint Design for Country Hotel, by E. B. Seely
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Suggestion for an Interior
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Study for a Proposed Facade, St. Peter's, Rome
Irving F. Morrow, University of California

Art, Architecture and Art Commissions*

By JOHN W. MITCHELL, Member of the Municipal Art Commission of Los Angeles.

TO protect the cities from architectural aberrations and from embarrassment of inartistic statuary and commercial monuments and other alleged works of art, it has become necessary to create commissions of experts, whose judgment may be relied upon and accepted as final, in all questions of civic art. This is the primary cause for the establishment of the Municipal Art Commission.

Indeed the purposes for creating Art Commissions in cities and a permanent Commission of Fine Arts in Washington, has rather been a measure of protection than otherwise, protection from inferior architecture and poor art in public work.

For years the cities of America, acting by their duly elected but poorly qualified officials, have in the erection and embellishment of public buildings and the selection of art works, such as pictures, statuary and monuments, heedlessly disregarded the best canons of taste and the first principles of art. In fact, with very few exceptions, there has been little refinement of taste and almost no display of judgment of art, shown in respect to municipal and state buildings and their decorations and in works of art acquired by purchase or gift.

The result is that there is strewn over the American continent, from ocean to ocean, a class of public buildings, monuments and statuary unfitted for their purposes and environment and of such unpardonable design and workmanship that no self-respecting and respected architect or artist would acknowledge them as their own and maintain a high class professional reputation.

The first important city to create an Art Commission was New York. At first as an experiment, it was but an advisory body. Fortunately only the most cultured and accomplished and competent citizens were appointed to this Commission and they acted with such judgment and so thoroughly demonstrated the usefulness and value of such a body to the municipality that by an amendment to the charter of New York the Art Commission was given absolute power over all matters of municipal art, including buildings and structures and their location; and no work of art could be purchased or received as a donation, by the city without the approval of this Commission.

To illustrate the power and usefulness of this Commission, when it was proposed to erect another bridge over East River above the Brooklyn Bridge, the engineers prepared the plans and let the contracts. The Art Commission, at this point intervened, and in effect, said, "You cannot build this bridge because this Commission has not approved the plans: and it will not approve the plans because they provide for a structure without architectural adornment, it is nothing but a bridge, a means to an end. If your engineers will collaborate with an architect or architects, you can make the plans for a bridge just as substantial and without much greater cost and provide an ornate, monumental structure that will combine beauty to its utility." The authorities, who only had in mind a bridge to carry traffic, laughed at the Commission. But the Courts upheld it. The plans had to be changed, and the result is that across East River is another bridge, that is an architectural as well as an engineering accomplishment, admired and pointed to with pride, by all the people of that great city.

* A paper read before the Los Angeles Chapter, A. I. A., November 14, 1911.

The history of the Municipal Art Commission of Los Angeles has been very similar to the history of the Municipal Art Commission of New York. In 1894 it was created by an ordinance of the City Council. This ordinance gave it no authority. It was solely an advisory body, and its advice was rarely asked or desired, though at all times the Commission has been in the main composed of able and competent citizens, well qualified to aid in deciding for the city, matters pertaining to its fine arts.

Upon each occasion since, when the charter of the city has been amended, efforts have been made to make the body a character body with proper authority, but it was not until the last amendment to the charter that this was accomplished. The Art Commission submitted to the Charter Revision Committee an amendment based upon the provisions of the New York Charter, which proposed amendment I had the honor to prepare. This was not embodied in the charter as submitted, but wtih some modifications of the authority sought, a Commission was established by amendment to the charter and it is now under this authority that the Commission is endeavoring to discharge its duty.

The charter now provided for a Commission of nine members including the Mayor, the City Engineer and Chief Inspector of the buildings and the head of the department interested in the matter for action, all ex-officio members, and five citizens irrespective of sex, having special knowledge or skill in the fine or applied arts.

The Mayor filled this Commission by reappointing the members of the old Commission, who at the time consisted of Mrs. Sumner P. Hunt, Mrs. Hugh L. Macneil, Mr. F. W. Blanchard, Mr. A. F. Rosenheim and Mr. John W. Mitchell.

The first important matter to come before this Commission as a charter body was the submission of the Department of Public Service (which is the new name for the Water Board) of plans for a building for the department to be erected at the S. W. corner of Fifth and Olive streets. The plans call for an eight story office building, of an order and style that would be suitable for commercial purposes and not unlike some other office buildings already constructed or in course of construction in the city. The plans were referred to a committee of the Commission and carefully examined and the committee reported against their approval, giving the reasons and this report was unanimously adopted, the vote thereon including that of the President of the Public Service Committee, who was converted to the views and opinions of the members of the Art Commission.

Thereafter the same plans with modifications supposed to meet some of the criticisms of the report, were again submitted, but before they were rejected, as I think they would have been, they were withdrawn and other plans of an entirely different building substituted. A friendly conference between the committee and the architects was held, wherein it was suggested that some important and material changes be made in this design and these being agreed upon and the ideas of the Commission being accepted the plans were approved.

The result of all this is that instead of having a sky-scraping office type building on the S. W. corner of Fifth and Olive streets, overlooking Central Square, the city will have its first municipal structure embodying a dignified order of architecture and also adapted to its requirements; and while it may be doubted that the Commission can subscribe to the statement in one of the Sunday papers, that this "Will be one of the hand-

somest municipal buildings ever constructed," still this Commission believes it did its duty thoroughly and that the people of the city will realize, when this structure is completed, that they will have an enduring, monumental, municipal building in keeping with the artistic and progressive spirit of the community and which would not have been the case, if there had been no Municipal Art Commission.

I may add generally in this connection: The design of public buildings, institutional buildings, school buildings and buildings of all description is of grave importance. It is one that the Art Commission believes to be most serious, and its purpose is, hereafter, only to assist in securing the highest architectural achievements. The Commission believes as Emerson has taught. "Our taste in buildings rejects paint and all shifts, and shows the original grain of the wood; refuses pilasters and columns that support nothing and allows the real supporters of the house honestly to show themselves."

Further on this point, I might repeat here that which I have maintained before: that the architecture of public buildings is the most important note in the artistic development of the nation. Great progress is being made in this respect. It is conceded that the Chicago Exposition set an example of architectural purity and consistency that is being imitated throughout the whole country. Unquestionably here in California the classic styles and orders of architecture should be carefully followed, and the language of Thomas Jefferson in a letter to Latrobe, in connection with the upbuilding of the National Capitol at Washington, should be a text. Said he:

"Embellish with Athenian taste the course of a nation looking far beyond the range of Athenian destinies."

And next to the design comes the location of the structure, statue or monument. While viewing many of the architectural masterpieces of Europe, one is struck by the paucity and unfitness of the site and surroundings. How rarely that these great accomplishments have the proper setting. The structure, statue or monument should fit into its site like perfect music unto perfect words.

The awakening of cities to their artistic needs is evidenced by the vesting of artistic authority in Art Commissions and similar bodies. There is a spirit abroad to make the cities beautiful as well as bigger. The quest of municipalities should not be solely for population; nor only the development of the commercial side. Beauty is a city's greatest asset and great cities are realizing this more and more. Paris, which claims to be "The City Beautiful" of Europe, fearing to lose its prestige, which is threatened by Berlin and other continental cities, is spending millions in making over the city along more aesthetic lines. Berlin, Rome, Vienna and even old London are in a frenzy of rivalry to become more attractive to the visitors entering their gates. And one thing worthy of note, in these European cities, is that its art is not alone for the rich. The state provides works of art in buildings, sculptures and paintings; it is everywhere, on all sides accessible for the rich and the poor alike.

In America much is being done in planning and beautifying in the cities. There is a great civic advancement in this respect. There is hardly a city that is not working out some concrete plan for remodeling and rebuilding upon more artistic lines, including with plans for transportation, sanitation and health, the increase of parks and park areas, their connection by boulevards and the establishment of civic and intellectual centers.

Here in Los Angeles many of our citizens have like ambitions for our beloved city. Commendable aspirations they are, too. But for myself,

while I share to the core their hopes, I am growing pessimistic in my expectations. Any suggestion for an appropriation for a Library Building, an Art Gallery, a great Convention Hall or the purchase of works of Art of any character, or even the increase of park areas, is met with the declaration that we must wait. Wait? Which means wait until the city is bonded to its full value and there can be no funds raised by this means—wait until we have the Owens River water, costing millions; Harbors costing more millions; a power plant costing still more millions, a municipal railroad costing still more millions and millions, to accomplish all of which will take years. Thus the commercial side of our life is not only dominating but excluding all else from the consideration of our daily lives.

Of the millions and millions appropriated by the last budget to the different departments and general expenses amounting to over $5,000,000 art for art's sake received the munificent allowance of $300. Instead of the moderate sum of $29,000 asked for by the Commission, for all purposes, this department received 1 per cent of its request. This $300 was for office furniture, but has not been expended because the Commission has not been provided with an office. While as has been indicated the Public Service Commission is to have a half million dollar home, the Art Commission is not provided the quarters called for by the charter, and is housed in the attic of the City Hall, sharing the office of the Housing Commission, where it is an intruder.

Still further along this line, our Library will doubtless remain for years where it is—in a Department Store in keeping with prevailing commercialism. Further, the law authorizes the Art Commission to receive donations of works of Art, but if a gallery of pictures were donated by some opulent and philanthropic citizen, there would be no place to hang them. These recitals but illustrate the attitude of official life to the art interests and ambitions of Los Angeles, and while it is deplorable to know it is more or less typical of conditions in cities throughout the country.

As to the relation of the Commission to the Departments of the City Government and to the tax payer and citizens of all classes, I believe time will establish a more hospitable and wholesome feeling. Its aims will be better understood and generally respected, for I believe I reflect the sentiments of the present Art Commission, when I say its purpose is not to engage in captious differences with any department of the City Government or any citizen in the discharge of its legal duty. It does not desire to dictate any unmeasurable rule of action, but only to counsel and co-operate with the sole end in view of cultivating the growing sense of beauty and art in all matters pertaining to our common civic life.

And now a word to you gentlemen, personally and as architects: After all, the appreciation of art is a matter of education and understanding and I deem it no small honor to present these views to you, which I desire to emphasize are solely my individual opinions. Upon the members of your profession rests, more than any other, the realization of the artistic ambitions of the nations. To the architects, painters, sculptors, landscape gardeners and engineers, must be left the execution of our artistic hopes and aspirations. By their work, to a great extent, will the public be taught to respect and revere art, which Maurice Denis declares "the sanctification of nature." By your aid can be brought about knowledge of Art's elevating tendencies and refining influences and its help to culture, which is the great need of our social life. Certainly great strides have been made by your profession in the last decade.

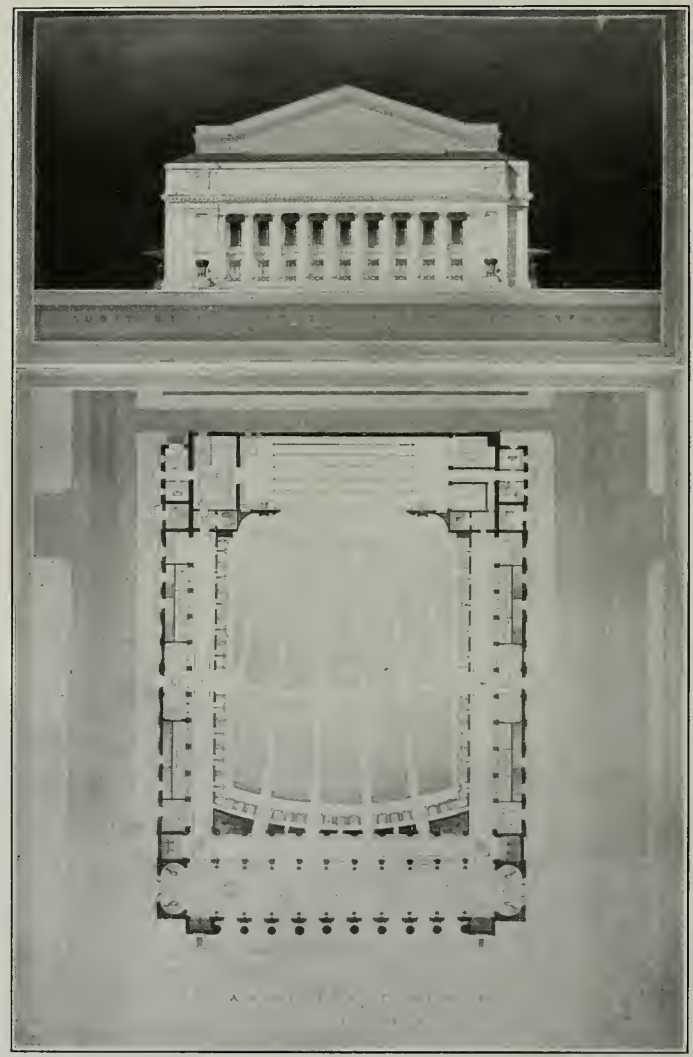
It is for you in planning the buildings of the future to put your artistic

beings in your creations. It is claimed that the world is waiting for an "American style of architecture." Some think we have an "American style of architecture." Have we? I hope what we have is not. We have, in many instances, slavish imitations of ancient orders and styles; copies of old masterpieces; enlarged or reduced replicas of temples and palaces, cathedrals and cloisters and utilized for the most utilitarian purposes and without reference to the eternal fitness of things. Only occasionally, through a long vista of failures, is caught a glimpse of the real. Though perhaps after all, the old order will always be the best. It will ever be the task of the architect to put new life into the old architectural themes. That is, perhaps, what is really wanted of you; rather than an American style of architecture. In this connection and in conclusion, I know of no more fitting words than to recall to you a paragraph from the address of a President of the American Institute of Architects, delivered at the forty-fourth annual convention, held in San Francisco, who said:

"Our American ideal need not, must not be expressed monotonously along narrow lines, but must expand broadly under varied skies, under climatic extremes, under varied ethnic and social impulses, unified by our American spirit. This may be if we are to be true to our aesthetic ideal. California is one phase of America, as New England is another and Manhattan is another; these phases are to be nurtured and developed and not swept aside for some manifestation of exotic growth. The American Institute of Architects is deeply concerned in the ethics of business and the profession, in the science of business and the profession, but its passion must be for that beauty which inheres in architecture."

And I add: Inherent beauty is art—and art is of God.

Robinson Cottage, Los Angeles
Myron Hunt and Elmer Grey, Architects



Front Elevation, Prize Winning Design, Portland Auditorium. (Reprinted by request, in connection with Mr. Cahill's criticism of the design.)

Criticism of the Architects' Competition for the Portland Auditorium

THE following open letter to Mayor Rushlight of Portland, Oregon, was sent out from the Portland office of Wright, Rushforth and Cahill, Architects, criticising the recent award of the Auditorium Competition Commission:

November 9, 1911.

Dear Sir:

Following the suggestion made by you at our conference today, I herewith submit the objections to the verdict rendered on the Auditorium plans—a verdict, unjust to the majority of the competing architects and of little use to the City of Portland.

By the terms of the official program, that document constitutes "an agreement between the Commission and each competitor * * * to which agreement each architect gives assent by submitting designs in competition." By these terms, then, further on it is stated that the jury "shall make careful study of the designs submitted with reference to their utility, fitness, economy of plan, construction and architectural excellence, according to the requirements of the program."

And among the requirements of the program is the following—

Cost and Size.

31. "The cost of the building must not exceed $450,000 including everything necessary to render the building ready for occupancy * * * The size must not exceed 4,500,000 cubic feet, nor must the architectural treatment, if that maximum size be reached, be more elaborate nor expensive than can be executed at a cost of ten cents per cubic foot."

And to deal with that type of person, all too common in sport and business, whose instinct it is to win at any cost, by fair means or foul, the following clause is deliberately inserted in the program at the very outset of the instructions to the jury under the heading:

Awards.

" * * * the Auditor shall turn the plans over to the jury of awards for careful examination with reference to their compliance with the requirements of the competition, and they shall exclude any drawings violating in any essential particular the regulations governing the competition."

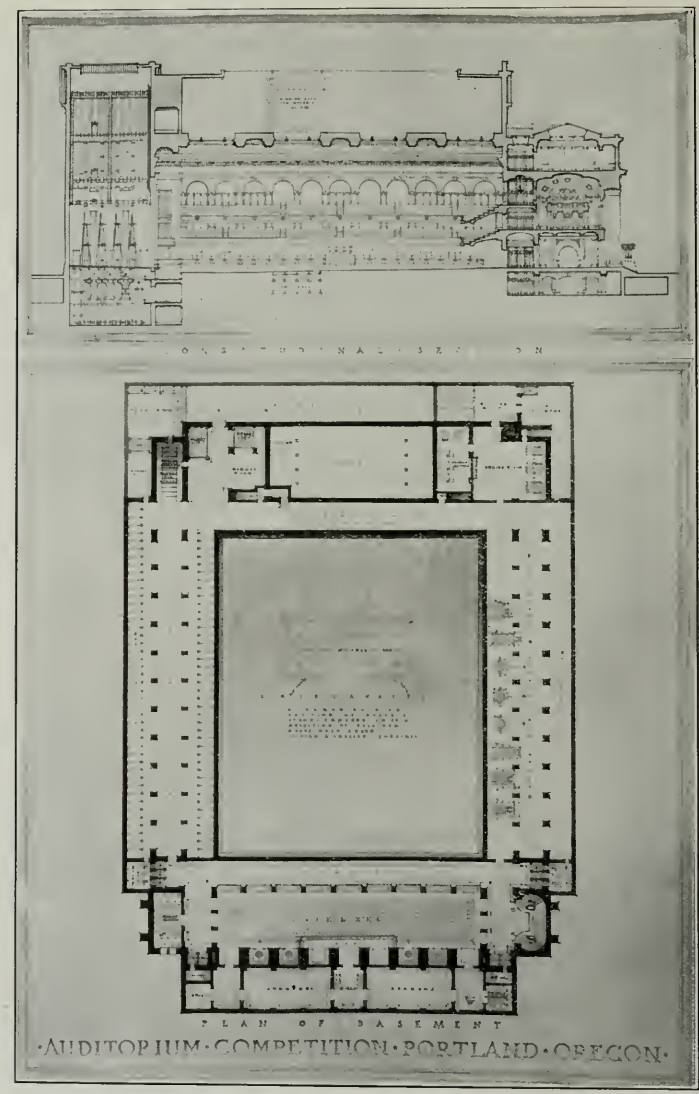
So much for the mutual agreement under which some fifty responsible architects from all over the country invested some $20,000 besides their own time in preparing and submitting plans. Those that conformed with the program expected that the jury would make their awards also in conformity with the program. This the jury have not done.

1. The winning design shows cubical contents much nearer six million that four and a half million cubic feet.

2. The building as shown on the drawings would cost easily from one to two millions. It is a monumental building costly in the extreme, and with not the remotest sign anywhere of restraint, economy or moderation.

For these two reasons alone, excess of size and excess of cost, these plans should by the terms of the program, "have been excluded" from the competition instead of being awarded the first prize. Because of this unfair verdict all of the competing architects have just cause for action against the Commission created by the City of Portland.

3. But these are not the only things in which the author has violated the terms of his contract as embodied in the stipulations of the program.



Sectional and Basement Plan, Prize Winning Design, Portland Auditorium. (Reprinted by request.)

He has in his drawings, entirely ignored the grades on all the streets surrounding the building. These grades are accurately indicated on a plot diagram at the end of the program. One of them is as much as a thirteen foot rise from one end of the building to the other. By ignoring these grades the author saves himself a vast amount of trouble that other competitors had to deal with, besides securing a simpler looking plan and more symmetrical elevations. This deliberate piece of cheating, the like of which I have never seen in any other competition is sufficient by itself to disqualify the plan with any jury who knows and conscientiously does its duty. And the reason is perfectly obvious. Of what earthly use is a plan showing, for example, an exit down a few steps onto a street when in reality this exit would be buried ten feet or more below the sidewalk! Not only is the plan worthless, when grades are ignored, but the elevations, so much admired, because worthless, too. No architect denies the dignity of the Doric "order" rising from a low stylobate through the entire height of a building, but when the lower part of this order has to be buried in the side of a hill the design becomes an anomaly and a misfit. It will not suit the site.

4. The program states that among other purposes the building shall be used for circus performances, horse shows and athletic meets. It also states that "Good sight lines" will be essential. An examination of the winning plan shows that the floor would be of little use for such purposes; being sloped in all directions and even if this defect were remedied, the spectators in the galleries could only see what was happening on the far side, all that passed on the near side from the center would be invisible to them.

5. The lower and most important gallery has a ceiling only eight feet high. Such a thing would not be practicable nor permissible even in a small cheap vaudeville house. Indeed it is axiom in theatre planning that no gallery should be less than 12 feet over the one below.

6. The program says, "Ample toilet and checking facilities must be provided throughout."

On the first gallery there are ten cloak rooms; on the second, eight. Eighteen paid attendants! And mark this; each little cloak room is but four feet deep. The toilet rooms too; on these floors are also four feet deep, and the authors have shown two water closets side by side in that space—a sheer impossibility!

7. The program says: "Ample circulation and exits must be provided for." This plan shows ample horizontal circulation—but at what sacrifice. Cloak and toilet rooms 4 feet wide and incredible as it may appear—staircases the same absurd width—and with curved and winding treads at that. This is a ridiculous violation of theatre ordinances and of course would not be permitted. No wonder one of the judges said the scheme was flexible: such cramping where utility is to be served, such expansion where the author's art is to be exploited, and all in direct defiance of common sense and the terms of the architects' contract with the Commission. But there are other examples of sheer bluff and make-believe on this plan even more daring—impudent is a better word, than these already pointed out.

8. An Auditorium, as the latin origin of the word indicates is a place where people can go to hear things—an organ for instance. The program calls for provision of 1500 square feet for this purpose, necessitating an expenditure of say $40,000 to $50,000. All competitors have planned the organ space where at least it can be seen and heard—some of course have done so more skillfully than others—but the author of this plan has not

only boxed in his organ with walls on all four sides, but a staircase actually intervenes between the organ and the audience. For practical purposes it might as well be in the basement. But the author has shown an actual drawing of bellows and pipes, to all appearances, so knowingly contrived that a superficial observer gets the impression of the architects' actual and profound knowledge about organs. It is "bluff" pure and simple. No sane organ builder, anywhere in the world, would think of building an organ in a closed pocket such as is shown on these plans.

The foregoing facts are all in evidence on the plans; they have already been verified by competent architects. A careful inspection of the drawings by anyone cannot fail to prove the accuracy of each several statement.

Comment could be made at length on various other illusory suggestions of this design such as the mechanical difficulties of the suggested adjustable stage and the absolute impossibility of swinging in both the galleries in the way they are denoted by a few dotted lines on the basement plan. The lower gallery with supports back and front might be moved in as in the St. Paul building, but a cantilever or bracket gallery hanging and supported from the main columns carrying the roof trusses must remain attached to the columns. The upper gallery simply cannot be moved.

Such, in brief, are a few of the practical shortcomings of this design which is neither "fair" in competition nor feasible in construction. Its only merit seems to be "slickness" of draftsmanship, perfection of "pochet" and a certain mausoleum-like magnificence of elevation. The drawings throughout are made to feast the eye and fool the reason. The building can't be built for the money and will not fit the lot. The organ can't be heard, nor the arena seen. The "movable" galleries can't possibly be moved; the emergency staircases can't legally be built. The only paying and permanent tenant, "The Historical Society," is thrust into the attic while a quite subordinate and occasional banqueting hall and buffet are "featured" in the front of the building and its basement. The cloak rooms are but closets and the toilets are a joke. No vehicles can enter the arena, and those shown in the basement can never come out—on their own wheels. The elevators are set in lightless shafts much too small. The ceiling beams which add to the cost and destroy the acoustics, are much too big. The front entry is exaggerated and the side exits are inadequate————But why continue the list?

Doubtless all these things can be changed and another design made.

This is precisely the unfair feature of the verdict to which I protest for the common good of the profession and as a member of the American Institute of Architects under whose rules this competition was begun but under whose rules this competition was certainly not concluded.

Respectfully submitted,

BERNARD J. S. CAHILL, A. I. A.

* * *

Concrete and iron stairways are required by law in Cologne, Germany, in all buildings except single residences of two stories. It is officially stated that there has not been a dwelling house burned down for many years as there are no wooden structures in the city, and fires in most instances have been confined to one room.

* * *

He who takes his own time generally takes other people's too.

To the HON. JAMES ROLPH, Jr.

Mayor Elect of San Francisco

Christmas and New Year's Greetings, Mr. Mayor!

And while we are wishing you the compliments of the season and expressing hope that your coming administration will be crowned with glory and achievement, we want to say:

That we have no political axe to grind;

That we are not looking for a job;

That we have no relatives or friends whom we would place on the city's pay-roll.

Let these points be fully understood.

What we want is what San Francisco needs—has been yearning for, suffering for—a long, long time.

San Francisco wants a clean, efficient administration—one that is free from scandal, free from graft and corrupt influences.

You, Mr. Mayor, with your harmonious Board of Supervisors, can give San Francisco such an administration if you will — not only for the first few weeks but for four long years.

And if you fail — would that there was no such word in the English vocabulary — well, if you fail, all the World's fairs in Christendom, all the Panama canals, all the energetic Business and Commercial organizations in the universe, will not make San Francisco the great center of population and prosperity she is entitled to be. Another such administration as we have just passed through would be worse than a repetition of the great fire of 1906, for the capitalists' faith in the city would be broken and — well, everybody knows what that would mean. Building and industrial activity would end and the trend of the home-seeker would be to some other more inviting locality.

There will be temptations, a great many of them, Mr. Mayor, that will try your honesty. Powerful contrary influences, no doubt, will be brought to bear at times when the city needs you most. Will you be strong enough to meet them? Will you be brave and courageous enough to rid the city of the unnecessary incompetents and sinecures who believe themselves to be now impregnably entrenched behind the municipal pie-counter?

We are with you, Mr. Mayor, at the commencement of your administration. We want to be with you at the end. If it's advice, or help you need at any time, we are at your service — Telephone, Douglas 1828.

"The Client"

Probably you could count on your fingers the number of architects who have not had some such experience—quite as aggravating, if not worse—as that related by Ellis P. Butler in a Frenchy little sketch entitled "The Client," in the November Architectural Record. There is so much truth to what Mr. Butler says that parts of the story are reprinted here with our earnest prayer that it may comfort some unfortunate who is right now passing through the same ordeal and who may have hypnotized himself into believing that he is alone in his troubles. The Fritz referred to in this story is a young student of architecture who has but recently become a full fledged practicing architect. He has fled the country to escape the wrath of a woman client—his first and only client—for whom he has designed a house that, while it is in keeping with the lady's ideas, is, to his mind, an impossibility, and he leaves the country because he cannot face the music he feels certain will commence when the contractor starts to build.—Editor.

A FRIEND meets Fritz in the Paris Latin quarter, much dejected, and sipping a glass of "Oon Bock."

He was pretty much of a wreck, and that is the truth. It took me two weeks to get the story out of him. It seems he finished his course at the Bozark (French for Fine Arts, you know) and stood right up among the top of the young fellows and left with glory. I believe somebody complimented him most highly on something. I think it was the plan of a two-story peristyle for a naval observatory for observing the perhelia of aeroplanes, or some other useful thing like that. At any rate, it was just what he needed to start him in his profession; and he went to Montclair and set up for himself as an architect, with offices in a yellow pressed brick building. I think that was one mistake. He said the architecture of the building depressed him from the very first. Some one had put the ready-made tin cornice on upside down—quite a natural mistake it seemed to me—but it annoyed him. For weeks at a time he had nothing to do but sit in his office and think about the row of floor de liss (French for iris) upside down above his head.

He told me—sitting there on the walk before that French cafe—that for months and months at a time, beginning when he had opened up shop, the profession of architecture was, as they say in Wisconsin, "punk." He would walk down from his boarding house in the morning and sit in his office until noon, thinking of $40,000,000 Gothic cathedrals and $100,000,000 city halls, and then he would go out and have luncheon and come back and think about plain, ordinary, Queen Anne cottages until three o'clock. He said he thought of $10,000 cottages immediately after luncheon, but by three o'clock he was thinking of $2000 cottages and just after three o'clock he began to think of woodsheds and additions to chicken houses, and he kept on down the scale until four o'clock, and then he began to think of the upside down cornice. It was what he called "shooting the chutes"—from a big, fat job of theological or civic work, with a fat commission, right down to that cornice. And it was something of a dip, for, if he changed the cornice to suit his taste, he would have to draw the plans for nothing and then pay for the work of flopping the cornice over.

Out in Chicago they have a word for insane asylum—"bug house." It is an expressive word, but not elegant, and Fritz says he was just about ready to plan a bug house and be one of the foremost bugs in it, when his first client arrived. It really saved his mind. It—the arrival of the client—gave him other things to think about. She—the client—wanted a house.

Now, you know what kind of a woman that is—the woman that goes to a young, just-in-the-game architect because it really isn't worth while going to any other kind; because, you know, "I know exactly what I want; I could do without an architect, Gladys, only I can't sharpen a lead pencil. Oh, you bite the wood off? Well, I can't bear the taste of cedar. Edward says I whittle up three pencils to get one point, but he needn't say anything. It's mother's money that is building the house. Poor mother! Died last August, you know. You should have seen the flowers!"

"Now, what I want," she told Fritz, "is something Queen Annish. I saw a house at Brookline, Massachusetts, six or seven years ago, that is just what I want, except that it was built on the side of a hill, and our lot is level. I depend on you almost entirely for the outside of the house, but I want it something like a house I saw in Columbus, Ohio, when I was a girl, only I want verandas on four sides, like a house I remember in Georgia last winter, and a pergola leading to the garage. We haven't decided where to have the garage yet, but as soon as I decide which direction to aim the pergola I'll have the garage put at the other end of the pergola. You might make the plan with the pergola going in several directions, and I'll pick out the one I like best. I want small windows; I think they are so dear and old fashioned; but I'll have large plate glass panes, if you please because it is almost impossible to keep maids if they have the corners of many small panes to clean."

Fritz said she was a woman of between thirty-five and forty, the size that is always on the bant but never giving up potatoes or food of other kinds—the sort of woman that has to wear good material in her gown or it will break out in innumerable places. She was the well dressed kind—the kind that wears gowns that look as if they had been shrunk on. When you meet a woman of that sort, look at her feet, and, if she wears high heeled shoes, you want to talk Louis XV. and "How would lavender satin wall coverings do for the boodwarr?" but, if she has common-sense heels, it is only necessary to say: "In my opinion a dwelling is incomplete without eighty-four large clothes closets."

This woman had common-sense heels.

Fritz said he saw the glow of pleasure in her eyes when he said his clothes closet saying, and he felt he was on the right track. She would want a huge living room with a field stone fireplace and a clearstory, but, as the plans progressed, she would come down to a living room at least as small as the whole building lot on which the house was to be erected and would accept a closet under the attic stairs in lieu of the clearstory.

"I would suggest," Fritz said to her, "for a comfortable suburban home, a clearstory—"

"Now wait!" she said. "Wait! I hope you don't think Edward and I are rushing into this building proposition without having given it thought. Far be it from me! You may not believe it possible, but I have planned this house of mine from cellar to garret—not once, but a thousand times! Yes, indeed! Two years ago last August, when mother had a turn for the worse, Edward said I had the plans as perfect as they could be, except that the lines were not quite straight, and that we ought to be satisfied with them as they were; but I told him I would never be satisfied until I squeezed that extra closet in somewhere. And I got it in. Indeed I did. Edward said he would not have believed it was possible, but I did. Of course, by putting it in between the bathroom and the attic stairs, it makes eight doors in a row on the left side of the hall, and there is only room for seven doors there, but that is what we come to an architect for, isn't it?"

"Yes, indeed," said Fritz. "If it were not for these slight technical difficulties, what use would we architects be?"

That was a mistake. He should not have permitted his client to suggest such a thing, let alone mentioning it himself. He should have said that plans drawn by well fed ladies—but he didn't.

"That's what I told Edward," she said immediately. "I told him that as long as we were able to tell you just what we wanted the outside of the house to look like, and just how we wanted the inside arranged, you wouldn't have anything to do, really, but draw the plans neatly; so, of course, you wouldn't charge as much as usual."

"Certainly not," said Fritz. "In many cases my clients—"

"I don't know anything about your other clients," said this one promptly, "but you understand this is no ordinary case. Most people don't know what they do want, and the architect has to tell them, but I have thought of this house so long I really feel as competent to plan it as any architect."

Very unique woman that, wasn't she?

"I understand that," said Fritz.

"Now, here are the plans, as I corrected them last night," said the client, edging her chair up to Fritz's desk and laying two sheets of letter paper on it. "You see, I moved the bathroom to the other side of the house last night. Edward thought it best to have it where it was before, but this was my idea. You see, the bathroom now has two doors. Here is one into the hall, and this one opens into the linen closet. That is so that if the maid forgets to hang sufficient towels in the bathroom I can step right into the linen closet and get all I wish. It is my own idea."

"Hum!" said Fritz. "But this door—this linen closet door—can't open here because the bathtub is in the way. You see, the bathtub really closes that door—"

"Why, yes; I didn't think of that," she said carelessly, "but that is what you architects are for, isn't it? To correct little things like that. Now, this bedroom—"

Fritz looked at the plan. He noted the dimensions of the bedroom and the width of the house and the width of the hall and the dimensions of the bedroom across the hall.

"I see!" he said. "This isn't drawn to scale, is it? Hum!"

"Do you think you see anything wrong?" she asked and not at all pleasantly.

"Wrong? Oh, not wrong! No, not wrong. But—but you see twenty and twenty and ten make fifty feet, and the house, as you have it here, is only thirty feet wide. That would make the bed-room—one of them—extend entirely over the wall of the first story—"

"That's the overhang," said his client triumphantly.

"I see! I see!" he said thoughtfully. But you have a fireplace here, and one here, and that would make one or the other come at the outer edge of the overhang. If a chimney—you see, don't you, that a chimney, to reach that fireplace, would have to climb right up through the air until it—"

"Not at all!" said his client. "If you looked at the first floor plan, you would see I have a porte cochere under that overhang, and that chimney could be one of the pillars of the porte cochere. That was one of my ideas."

"It—it is unusual," said Fritz, "but it can be done." He looked at the first floor plan. "Hello!" he exclaimed, "this porte cochere does not come on that side of the house at all!"

"Oh!" said his client. "I forgot. I moved it over last night."

"Ha! Ha!" Fritz laughed in a polite manner. He did not think there was anything funny, but you know how a man will gurgle a little for mere politeness.

"Are you laughing at my plans?" asked his client angrily.

"Plans?" said Fritz. "Laughing at your plans? No, indeed! I—I just happened to think of something funny. About a—a man named Smith."

"Because," said his client, "there is nothing at all funny in a small mistake like that. I dare say many architects make such mistakes."

"Of course! Certainly!" said Fritz, for it was his first client.

He told me she went away at last, after telling him everything about the house, including just how much money her mother had left and where her grandfather was born, and every little detail of that sort; and Fritz settled down to study the plans she left with him. He said they were pretty bad, and Fritz would not say that about anyone's plans unless it was true. There was no scale. His client had just drawn a square, and then stuck in the rooms and closets where she wanted them. A room 12 by 20 and a closet 4 by 6 would be put down side by side, each occupying the same sized space on the plan. That was the reckless way she had drawn the plans. Fritz sat there until midnight, trying to make head or tail of the thing, and then he sighed and went home.

The next morning he had a clearer head, and he set to work on the first floor. He worked three days on the first floor, but he managed to get everything in—all the rooms and closets and doors and windows and stairways and chimneys and clothes chutes and fireplaces and plumbing and everything else, and he made a neat plan, with arrows going "up" the stairs, and all that sort of thing; and the third evening he took it to his client's house. He expected to have it torn all to pieces, and he was ready for the worst, but, as soon as he had unrolled the plan on the dining room table, and his client and her husband had studied it a few minutes, they looked up beaming and said it was just exactly what they had wanted—just exactly!

"It is fine!" she said frankly. "Now, just do the second floor as well as you have done this, and I will think you are the greatest architect in the world!"

So Fritz rolled up the plan and took his hat and started.

"Here!" she said. "Are you going to take that plan away with you?"

Fritz explained that it was the only copy; that he needed it for the dimensions; that he would make blue prints. She seemed disappointed.

"I thought you would leave that with me," she said. "I wanted to show it to my cousin Henry. Cousin Henry is a builder. At least, he is just going into the building business, and he is going to build this house for me. But I suppose there is no use showing him part of the plan until he can see it all."

"Not a bit of use," said Fritz.

Then his work did begin. It was easy enough to make a plan of the first floor, because his client had not put much more on the first floor than could be put on it, but the second floor was considerably crowded. But Fritz said he set to work on it and changed the rooms around and shifted the closets and bathroom and moved the stairs and rearranged the windows, and in a week he had as neat and pretty a looking second floor as anyone could wish to see. Then he took it up to his client's house.

The minute he unrolled the plan her face fell.

"Oh!" she said with disappointment. "You brought the wrong plan."

"No, this is your plan," said Fritz. "You see—"

"Oh, no!" she said firmly. "This is not my plan. This is some one else's plan. I had my stairs here and not here; and I had this bathroom here and not here," and so on. There wasn't a thing, it seemed, that Fritz had left where it had been. And that was true, too. You can't start a flight of stairs up one side of the house and have them arrive in an entirely different place on the next floor. He explained that if he started the stairs where they did start on the first floor plan and let them arrive where his client wished them to arrive they would have to get underneath the bathroom somehow, and the only way to do that would be to have the bathroom suspended from the house roof by means of chains.

"Very well, then," said his client acidly. "If that is necessary, do it! No doubt there is a way to suspend bathrooms. That is what an architect is paid to know. But I will not have my plan distorted in this way. Suspend the bathroom, if necessary, but don't spoil the plan I worked over for years.

"But, my dear madame," said Fritz. "I was only joking. I never heard of a hanging bathroom. It would not do at all. You couldn't get into it. And persons ascending the stairs would bump their heads against it."

"If that was a joke," she said firmly, "architects should not joke. I thought you were in earnest. But I'll not have my second floor plan ruined. You go back and draw out my second floor just exactly as I had it."

"But—" said Fritz.

"Not another word!" she cautioned him. "I might let you alter the first floor but not my second floor. I keep house, and I know how I want my second floor better than any man can know. If I want a closet in a certain place, I want it there. If I want the stairs in a certain place, I want them there. Please understand that!"

So Fritz went back to his office and worked out a new second floor, keeping as close as he could to her plan; and then he worked out a new first floor, making it subordinate to the second floor. Then he did the elevations and the attic, and when he had the whole thing complete he took it to his client's house again. The minute she saw the second floor plan she was delighted with it.

"Just exactly what I want!" she said. And she was well pleased with the exterior as Fritz had planned it. But the moment her eyes fell on the revised first floor plan she began shaking her head.

"Oh, no! No, no, no!" she said. "This will not do at all. This isn't my house. No, no! I liked the first plan much better."

"But you can't have that first-floor arrangement with this second-floor arrangement," Fritz explained. "For example, this chimney in the dining-room is on the left side of the house in the first floor plan you like, but it is on the right side of the house in the second-floor plan you like. Now, that chimney would have to rise one story, and then cross the house between the ceiling and the floor and go on up."

"Well, what of that?" she asked. "Suppose it does. You are an architect. You ought to be able to fix that some way."

Fritz gasped.

"And these stairs. These back stairs. On the first-floor plan you like they join the front stairs, but on the second-floor plan they don't. They

are entirely separate and distinct, and in an entirely different part of the house. You can't have stairs running all around in that way, as if they were a picture moulding."

His client looked at him reproachfully.

"I thought an architect was a man that knew his business," she said.

So Fritz went back to his office again and tried to make the two plans she liked jibe in some way, but the more he worked over them the more confused he became. He had chimneys and flues running all over the place. A perfectly respectable flue would start from the cellar and go up through the parlor, and then suddenly begin to zigzag around like a picture of a very dangerous streak of lightning. A clothes chute would start down from the back hall in a perfectly well-mannered way, and end in the cellar after making a regular wavy roller coaster of itself. And the plumbing! There were places where a pipe had to go around the stairway and after entering a room back out again as if it had made a bad mistake, run the length of the house and end where there was no room and no house. There were some first-floor rooms without roofs, and some second-floor rooms that had to float in the air. The more he worked at it the worse it was, and he was beginning to see strange animals at night when his client began coming to the office again. She said it was getting late in the season, and they must build soon because Cousin Henry might get another job, and their lease was running out. So Fritz showed her the plans as far as he had them. She said they would not do at all. What she wanted was a first floor like the first he had drawn and a second floor like the one she wanted, and they were just where they had been before.

Fritz put in another two weeks on the plans, and she was worrying him so that he was about to lose his mind. He did lose his temper.

"All right!" he said. "Take your plans!"

He did up the original first-floor plan, and the second-floor plan she liked, and the attic plan, and the cellar plan, and the elevations, and the perspectives, and the specifications, and handed them to her. She looked them through.

"Now, that is just what I wanted!" she said, and she sat right down and wrote a check. Fritz took it, and had it cashed, and as soon as he had done that he began to worry. He could think of nothing but what that builder cousin would say when he saw those plans. He waited one day in his office for his client to come back and tear him limb from limb, and every time a door shut in Montclair he dodged. He was so worried that he even dodged the mosquitoes. Every woman he saw he imagined was his client, and the third day after that he went to New York and took a steamer for Paris, and there he had been sitting ever since, at the tip of the cape of cafe tables, keeping one eye out for the client of his.

"When that builder," he told me, "finds that kitchen chimney doesn't meet the upper section of itself by three feet, he's going to be very, very angry. And when he finds that that bathroom has to be hung from the roof, and that the water will have to enter it through rubber hose, I'm ruined. That's all. I'm ruined. That woman—you know the kind she is—will not be satisfied until she runs me down. Who is that?"

It was only a gendarme in his cloak, but it gave Fritz a start of fear.

"I've got to leave Paris," he said. "She's liable to drop down on me any minute. I've got to go to China, or Peru. Do you know anything about Madagascar? Maybe Mrs. Scroggins would not think of——"

"Scroggins?" I said. "Did you say her name was Scroggins? Mrs. Edward Scroggins?"

"Yes," he said, his eyes big with fear. "Is she in Paris?"

"Paris? Not much! She's in Montclair. She's in her house—her new house—and she's happy and contented! Lovely house she has, too. I visited her a month ago. She did not say a word about you, Fritz. Not a word. Said she planned the house."

"Did you—did you see the hanging bathroom?" he asked.

"Hanging bathroom!" I cried. "Hanging nothing! That house has just as safe and sane a bathroom as any house I ever saw."

Fritz looked at me a full minute. He could not believe me.

"The stairs?" he said. "Do—did you have to jump far to get across that gap in the stairs?"

"Gap?" I said. "Nonsense! I never saw more graceful or comfortable stairs. Beautiful stairs!"

"Didn't she—didn't she say anything cruel?" Fritz asked, hope beginning to shine in his eyes.

"Not a word—or yes! Yes!" I said. "I remember now! She did. She said—let me see, what was it? Yes! She said the builder she had was almost an absolute idiot. She said he was a stupid ox. That is what she said. She said she gave him as clean and plain a set of plans as ever were drawn, and he took them, and the very first thing he did when he had them was to sit down and look them over and begin to cry like a baby. She said she knew right then she had made a mistake in picking her builder, and it turned out that she was right. Every time he looked at the plans he seemed to have an attack of insanity. She said he would look at the first-floor plan, and then at the second-floor plan, and then go down to the corner and get behind a tree and swear. But she said she held him to his work. She said he would come to her like a child and complain that something was wrong with the plans—that something they demanded absolutely could not be done. Then, she said, she told him 'Nonsense!' and he went back to his work and did whatever it was just as she wanted it."

Fritz turned up the rim of his slouch hat.

"Let's get in out of this rain," he said, and moved back under the shelter. He took off his rain coat, and gave his moustaches a dainty twist.

"Stupid lot, those builders!" he said. "Ruin half the work a good architect plans. Hey! Gasson—doo bock!"

* * *

Asphalt Floors Not a Success

CONCRETE and asphalt floors without wood or cork coverings are not a success. Asphalt floors in the San Jose high school have been giving the authorities all kinds of trouble. Teachers and pupils say the floors are cold and that the extreme solidity of the surface tires the feet. The following letter has been received from the principal of the school, Mr. Lewis B. Avery:

"Replying to yours of recent date, sent to Dr. Rockwell D. Hunt, and forwarded to me, I have to say that the floors in this building are not of concrete but of asphalt. They are not as noisy as concrete floors, but are not cleanly, and school furniture cannot be firmly fixed to them by ordinary methods. We have been compelled to use expanded metal bolts and fix the furniture to strips.

"Regarding the acoustics of the auditorium, I will say that there is considerable echo which we have not been able to avoid."

Fireproofing*

By RICHARD L. HUMPHREY, of Philadelphia, President of the National Association of Cement Users.

WHILE it is true you do not have here the huge capital losses we have in America, there is no reason why you should have them at all. Of course, in America great conflagrations have occurred. The one in Chicago was perhaps only second to that in San Francisco; but in Boston in 1872 and Baltimore in 1904 conflagrations of great size, which destroyed property worth millions of dollars, occurred, but were only small in comparison with the large area of Chicago and San Francisco. In Baltimore the fire-fighting service from Philadelphia, New York and Washington were practically powerless, because in the extreme cold weather which prevailed at that time the water service was of little value. It is interesting to note that in the San Francisco fire it is estimated that the profits of twenty years were destroyed in a fire of three days' duration. It frequently happens that the walls of a structure are standing after a fire, and people point to those walls as an evidence of the fact that the building has satisfactorily passed the conflagration. It often happens that the walls are of concrete, and after the fire are in good shape, and only require a renewal of the floors, doors, and windows and roof to make a habitable dwelling. It frequently happens that the floors and columns are fireproof, but the front walls are cast iron, which are destroyed, or the walls of brick all fall down.

One of the best examples in America of the behavior of reinforced concrete in a serious conflagration was the building of the Guarantors Trust Company of Baltimore. Load tests were made on these floors after the fire by the Building Department, and they were found to be amply safe under the ordinary building laws. In the destruction of the adjoining building opportunity was afforded for the construction of a modern building, and it became necessary to tear down the rebuilt structure because it did not fit in with the new structure, otherwise it was in very good condition.

Stone is very largely used, not only in Europe and America, but all over the world, as an ornamental material, and it is evident, I think, from the study of buildings where there have been fires of intense heat, that the stone is almost entirely destroyed. It is almost impossible to replace the ornamental character without rebuilding the strucure entirely, and the behavior of granite and hard sandstone in fire, which splinter and split, is ample evidence that the subject of natural building stones should be studied with a view to determining their resistance to fire. The United States Government has undertaken some studies of this kind, and has found that it makes a material difference as to how the stone is quarried in its fire resistance. The investigators found that granite can be quarried so as to offer almost 100 per cent greater resistance to fire in one direction than it does in the other direction; so that in the matter of ornamental building stones there is much to be learned in the manner in which the stone is quarried from the point of view of its fire resistance. Of course, in a building of this kind the destruction cannot be estimated. The mere fact that the skeleton remains is not very much consolation, and when ornamental parts are also structural parts carrying the walls, then, of course, the construction seriously endangers the safety of the structure, and when granite columns form the interior columns of the construction their destruction is a matter of serious concern. If stone is to be used as a struc-

* Abstract of a paper read at the Concrete Institute, London, Eng., November, 1911.

tural member of a building it must be fireproof, just the same as a steel member shall be fireproof.

In nearly all the great conflagrations which I have visited—and I have visited most of them in America—it is a frequent sight to see buildings of steel which have not been properly fireproofed entirely destroyed, and it is evident, I think, that something must be done to protect that material, for while steel may have great strength at normal temperatures, it has little or no strength at high temperatures. Then, again, it frequently happens that the floor of a structure may be reasonably fireproof and constructed properly, but the supports of the floor are cast iron, or some equally bad material, and the failure of the column to support the floor causes a collapse. It is a striking fact that architects and people in general in America regard burnt clay as an admirable fireproofing material, and, I think, in a large measure this opinion has been based on the fact that small pieces of burnt clay, when placed in a fire and got hot and thrown into water, are not disintegrated. But the clay is not used in that way. It is used in the shape of a tile. In the process of manufacture it often happens that these tiles are cracked in the corners, and when a column which is fireproofed is subjected to the action of heat, the unequal expansion of the outer face of the tile, contrasted with the inner face against the steel, causes an expansion which the thin web at the corner is unable to resist, and the tile and the web crack. As a result the tile is broken away from the column, and the column is left to the action of the heat and collapses. It often happens that in the construction of columns an attempt has been made to fireproof them by binding around the column perhaps a metal fabric and then plastering it.

In the Fairmont Hotel in San Francisco, about a hundred columns fell as a result of this kind of fireproofing. It frequently happened that the floor settled as much as a foot. Now, you must bear in mind that there was no great fire in that building. The hotel had not been completed, and the only material there was the lumber that was used in the construction of the building, which was not a great amount; but the burning of this lumber was sufficient to develop enough heat to buckle the flimsily-constructed columns, and in the destruction of such buildings one frequently sees the folly of those flimsy evasions of the law. It is quite general in a fire to find that where terra cotta tiles have been used the lower web, by reason of its expansion, has flaked off, and you see the floor area. Perhaps as much as 35 per cent of the web failed, so as to come off, while a larger per cent, perhaps, are cracked so badly as to be able to be pulled off with the fingers. Now, in a case of that kind, nothing can be done in the way of restoration except by entire reconstruction of the floor. The floor, of course, is an important structure. If the column is reasonably fireproof it is necessary that the floor shall be fireproof.

The suspended ceiling as found in the San Francisco and Baltimore fires, acted as an excellent shield, and greatly increased the fire-resistance of the floor. Unfortunately, in carrying out this idea, it frequently happens that ordinary gypsum or plaster is used, and with a very flimsy anchor the gypsum loses its life at a low temperature; the anchor is destroyed in heat, and the ceiling falls. It generally happens that the roof trusses of a building are never protected. The upper ceiling is rendered reasonably fireproof, but the steel trusses of the roof are not protected, and, as a result, it frequently occurs that the roof becomes the entry for a fire from the outside. It is just as necessary to protect the steelwork of the roof as it is any other part of a structure. In most cities we find that there are

buildings of large size that are reasonably fireproof. They are monumental in their construction, but they are surrounded by fire-traps, and this is particularly true in our large cities in America, where we have buildings that are extremely high, and which, if they were properly protected with metallic window-frames and door-frames and wire-glass windows, would probably act as a barrier; but with unprotected plain glass and, perhaps, wooden frames, the destruction of the tinder-boxes that surround them brings about the destruction of the contents of the buildings and the buildings themselves. It is not only necessary that the floors and columns of a building shall be properly protected against fire; it is also necessary that the exterior exposures—not only the interior but the outside—shall be protected. It frequently happens that the windows are, perhaps, metal frames protected with terra cotta or some similar fireproofing, and the destruction to those windows leads to an easy access for the flames to spread from floor to floor, and lead to the entire destruction of the building. In some cases, where metal doors and windows were used, and plain glass used in the window, the glass simply softened and fell down, and so, of course, the barrier was of little value. On the other hand, when the window is constructed with metal frames and wire-glass windows of approved type, the glass often softens, but still stays in place, and prevents the fire from gaining access to the building.

Personally, I believe that concrete is going to play a very important role in the question of fireproof construction of the future, and it was for this reason that I took for my subject tonight, in addressing this Institute, the subject of fireproofing, because I believe that the Concrete Institute of England, and the concrete organizations of America, have an important responsibility, and a very important task before them. We know that concrete is reasonably fireproof. We do not know much about its properties or the methods of the construction from the point of developing buildings of the highest fire resistance. It is a fact in America that in a report of the various concrete buildings that have been erected during the last five years, the owners of 23 per cent of the buildings reported that they carried no insurance on the buildings themselves, that they merely insured the contents. Now, in a building of concrete, when properly constructed, there is a building of the highest fire-resistance, but, unfortunately, there is a tendency to design the structural parts of a building without providing any fire-protection. It is just as necessary to provide fire-protection for the concrete member in the structure as it is for a steel member, a wooden member or a stone member. There is no doubt that different aggregates have different rates of expansion, and that these different rates of expansion cause a proportionate destruction of the concrete.

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Primitive Reasoning.

"Did you sell your vote?"

"No, siree. I voted for that feller 'cause I liked him."

"But I understand he gave you $10."

"Well, when a man gives you $10 'taint no more'n natural to like him, is it?"—Washington Star.

George Washington, Architect

"MANY men of many minds" is a platitude which marks rather variation of opinion than of intellectuality, while the woman of many minds is but the 20th century descendant of an ancestor "semper mutabile." Now and then, however, in the passage of time, we find the man of many minds, in the stricter sense of the term. During the Renaissance it was no uncommon matter to find one who could turn from painting to music, from music to mathematics, from mathematics to war, from war to literature and from literature to architecture, engineering or physics, and excel in each. Even in later times when specialization increased, the same gift is sometimes found.

In the early days of our country, circumstances forced a varied activity upon the people and it is not surprising to find the father of his country revealing this trait, writes Lucy D. Thomson in the Springfield Republican. Fondly as we cherish all that relates to him from the mythical tales of the cherry tree to the many Stuart portraits, his deeds as an architect are known to comparatively few. The central portion of Washington's home at Mount Vernon was built before it became his property, but after his retirement it proved wholly inadequate to his needs, and he set about enlarging and improving it; drawing the plans and elevations, writing the specifications, overseeing the workmen, laying out the grounds and transplanting shrubs and trees from his forests. The house was enlarged at each end and the eastern portico built. Curving arcades connected the house with the kitchen and storehouse, and the various accessory buildings were added, including the charming litte octagonal tool-houses built on the wall. These, like the house, are of wood, paneled to imitate stone, and with brick bases. An icehouse was also built, to the great interest of the neighborhood, as it was a new thing in Virginia and not common anywhere.

There was, moreover, much building to do on Washington's farms—houses for the overseers, quarters for his 250 negroes, barns, etc. Washington writes of one of his brick barns: "It is equal perhaps to any in America," Another was of brick and wood, 16 sided and 60 feet in diameter. At the second-story level there ran a threshing gallery, 10 feet wide, with a slatted floor. An inclosed plane led to this, and the oxen were driven up for the treading, while the grain fell through to the floor beneath.

Washington found time also to plan a number of houses for his friends. The best of these is, perhaps, Harewood, built for his half-brother, Col. Samuel Washington. It is a fine stone building, with generous halls and rooms wainscotted and with rather elaborate carvings. Lafayette gave the owner several marble mantlepieces, and pretty Dolly Todd was married to James Madison in its finest room.

Aside from domestic architecture, I know of but one building designed by Washington—Polrick church in Fairfax county, Virginia. He was one of the building committee chosen to replace the old wooden building. As not infrequently happens in ecclesiastical architecture, a dispute arose over the site; some wished the new church on the site of the old one, while others opposed this. Among the latter was Washington, who finally settled the question by drawing a map, showing the house of each parishioner and proving the location he favored to be the center of population. He drew the plan and front elevation for the building, which, it must be confessed, has more the air of a school-house than of a church. It was built of brick made in the neighborhood, and has recently been restored to its original condition, as nearly as possible.

Concrete Sanitary Sewers Not a Success

By F. C. DAVIS, C. E.

IN recent years there has been a great broadening of the uses to which concrete are put. Reinforced concrete has become a popular building material and is being—due to its wide adaptability and relatively low cost—frequently used under conditions where its propriety may well be questioned.

The tremendous impetus that the introduction of this new material, or rather combinations of materials, has given to the cement industry and to the application of concrete to new uses is everywhere apparent. Sometimes perhaps the forward movement in this matter is made without due consideration. There is no question that in the matter of the relative adaptability of the various materials to the same purpose, final conclusions should not be hastily drawn, and that in such matters whenever possible the builder should be favored with the result of actual experience. It is with this purpose in mind that this brief paper is prepared in which some of the limitations in the use of concrete for sanitary sewers will be pointed out.

It may as well be stated at the outset that small concrete pipes are endeavoring to compete with the iron stone pipe, or vitrified salt-glazed sanitary sewer pipe, which for many years has been accepted as standard, not because of any discovered defects in the latter nor yet due to any superiority of the former, but for the reason that concrete pipe are offered at a slightly lower price.

Under these circumstances the question naturally arises whether the saving of a few dollars in first cost is real economy; whether in other words the risk involved in the use of thin-shell concrete is justified just because its installation is or may be somewhat cheaper.

It is hardly necessary to state that the conduits for sewage are to conduct the water-carried waste of the community or small establishment, as the case may be, to some place of disposal, without allowing the sewage in transit to become either a nuisance or a menace to health.

The well glazed, hard-burned clay material which has come into general use for this purpose, when well laid, has proven entirely satisfactory. The glassy smooth surface to which it is finished not only minimizes adhesion of the sewage to the walls of the conduit but adds to the imperviousness of the shell. The manufacturer has been able to meet every requirement in the shape of specials and strength. The cost of the pipe of this character has been reasonable. Maximum diameters obtainable are frequently used in preference to small-sized brick conduits. These facts are so well known that it seems almost superfluous to allude to them. So also the additional one that when sewage is unusually acid no fear need be entertained that the walls of the sewer will be attacked. The vitrified material resists the action of even the strongest acids.

With reference to concrete as a material of which to construct sewers it is recognized, that in many parts of the world, sewers of this material are apparently in successful use and that such sewers are being built today. But the general practice has been to build concrete sewers in forms with thick walls, comparable with the dimensions that are given to brick sewers. Where on the Pacific Coast in the past the concrete was tried in relatively thin-shelled pipes there have been failures. Although it may be impossible to point out at this late day the reason why the so-called cement pipes became soft and mushy, the fact remains that at San Francisco and at Alameda such pipes were the cause of many breaks in pavements and

Septic tank at California State University Farm, built about 1908; photo taken October, 1911, showing concrete in effluent chamber disintegrated by domestic sewage, while the vitrified clay pipe remained in perfect condition. The floor of the effluent chamber of this septic tank is some seventeen feet below the surface of the ground.

washouts of the streets, and were the source of much inconvenience and expense until they were replaced with ironstone pipes. In San Francisco after about 16 miles of this type of concrete sewer had been laid, its use was discontinued in 1885, and, due to failure, practically all of this pipe has now been removed.

The destroying effect upon cement of some of the sewage ingredients has had something to do with this. In this connection attention is called

to the photographs herewith which give an excellent idea of the disintegration which is frequently noted in the case of septic tanks constructed of concrete.

Both of the full-page photographs show a very bad disintegration of the concrete walls which has taken place between the high and low sewage levels. The vitrified clay pipe has remained in perfect condition. On the outside surface of this clay pipe is indicated a rough surface which is the result of the disintegration of the cement mortar above the bells which has turned into sulphate of lime and has crawled down the side of the pipe. The concrete on the face of the wall from the bottom of the tank up to about 5 feet above the floor is disintegrated to a depth of from one inch in thickness on the wall proper, to four inches in depth on the engaged concrete piers, all of which can easily be scraped off from the walls and piers with the naked hand. In fact the concrete is so badly disintegrated that much of it can be scraped off from the wall and piers with an ordinary sheet of folded writing paper.

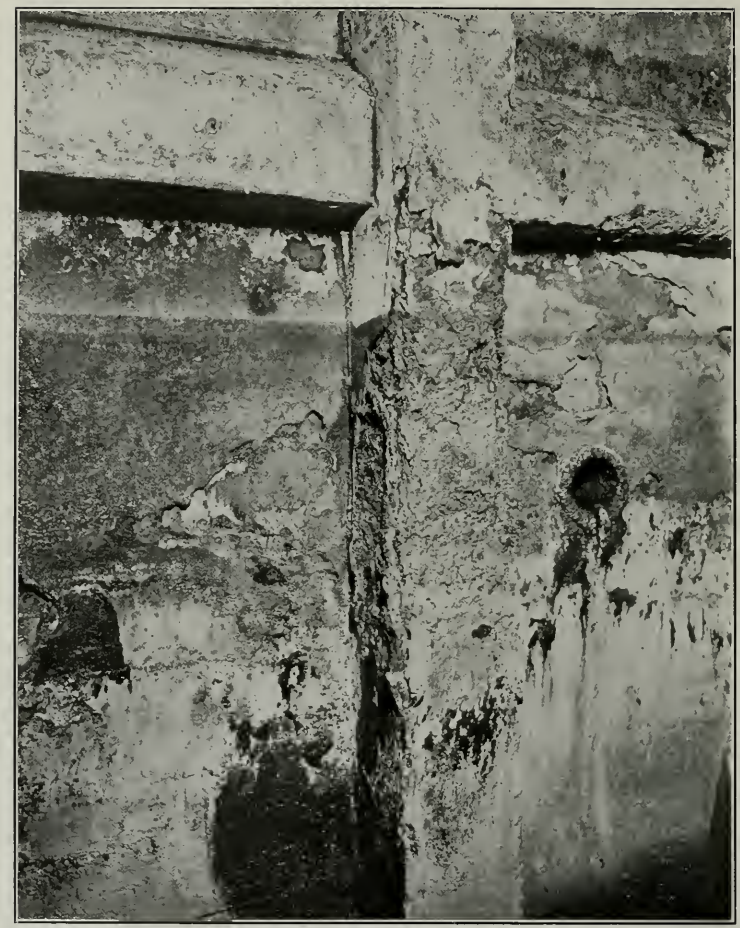
On the walls between the 5-foot level and the wooden ceiling of the septic tank there is a complete disintegration of the face about ¾ inch in thickness, and this seems to be about the consistency of butter or thick moulded cream. The concrete wall underneath the disintegration presents a smooth and exceedingly hard surface which will resist vigorous blows with a hammer and cold chisel. The concrete was evidently well made and composed of good materials. That part of the concrete wall above the wooden ceiling, some 12 feet above the septic sewage level, which has not come in contact with septic sewage is hard and dense.

The sewage which is here treated is entirely domestic. There are "no trade wastes" or acids, or alkalies from any laboratories, or manufacturing industries whatever. The sewage effluent upon being tested with litmus papers gives neither an acid or alkali reaction, the litmus papers not being in the least discolored; but nevertheless the effect of the sewage in less than three years' time has made it plain that sooner or later the thick concrete walls will be eaten through and entirely destroyed.

The disintegrated concrete itself gives a very weak acid reaction and is accounted for by the fact that the concrete is continually gathering up and imprisoning the weak acids that are naturally found in all domestic sewage. This septic tank was built about three years ago under the personal supervision of the Professor of Sanitary Engineering, University of California. Only the very best Portland cement and aggregates were employed in this work. A wet mixture of 1-2-4 was used for the body of the walls, the surface of the walls were afterwards treated to a rich top dressing of a 1-1½ mixture well troweled down and made in the best possible manner that can be secured with skilled labor and the best of materials.

Engineers who have made a careful and disinterested study of the subject of the disintegration of concrete look upon the disintegration of this septic tank and other septic tanks as showing in the short space of two or three years what will eventually happen to all concrete pipe in continued use for sanitary sewers in a greater length of time, say from five to twenty years.

Sulphur finds its way into sanitary sewers in the form of sulphurretted hydrogen from the toilets, also as sulphate of sodium and sulphate of calcium in the waters used for domestic purposes, as well as from ground waters. In the "Journal of Association of Engineering Societies" July, 1911 on pages 26 to 33 and 39 to 41, Mr. George W. Fuller, and other prominent sanitary engineers mention a number of times that sulphur is a usual ingredient of domestic sewage. The following is quoted from



Septic tank at California State University Farm; built about 1908; photo taken October, 1911, showing concrete in effluent chamber disintegrated by domestic sewage.

this article—"Reference is here made in particular to the true sulphur bacteria which, of course, do not produce sulphuretted hydrogen, but, on the contrary live upon sulphuretted hydrogen and convert it to metallic sulphur. Another group of bacteria which might be spoken of are the sulphate-reducing bacteria which are capable of producing sulphuretted hydrogen by the reduction of mineral sulphates. The latter seems to be a factor of importance in Southern California and a number of other places, where the writer has observed unusual quantities of sulphuretted hydrogen."

Fig. 1— "A" indicates hole dug out with finger nails.

"B" indicates hole easily punched through pipe with the finger.

This 12-inch concrete pipe was running half full of sewage.

Lower half of concrete pipe is soaked with sewage and is very soft.

Upper half of pipe being very hard indicates that pipe was made under proper specifications and with good materials.

The uninformed friends of concrete pipe claim that there are no acids in domestic sewage. Little by little the engineering profession is becoming convinced that acids in weak solutions are evolved from the decomposition of domestic sewage. From the kitchen there are a large amount of fats, both from the dish water and from the hot water turned off from cooked meats. These fats develop stearic acid which is very mild in itself but nevertheless has a disintegrating effect when imprisoned for many years in the pores of concrete.

The usual domestic sewage containing considerable sulphur first forms a sulphuretted hydrogen compound H_2S. This H_2S later becomes a sulphurous acid H_2SO_3, which in itself is harmless to concrete and very mild in its action and is largely employed by paper manufacturers in their pulp digestors which are usually lined with a very rich mixed concrete. These pulp digestors are not disintegrated by the three per cent solution of sulphurous acid, as the paper manufacturers are very careful to see that it

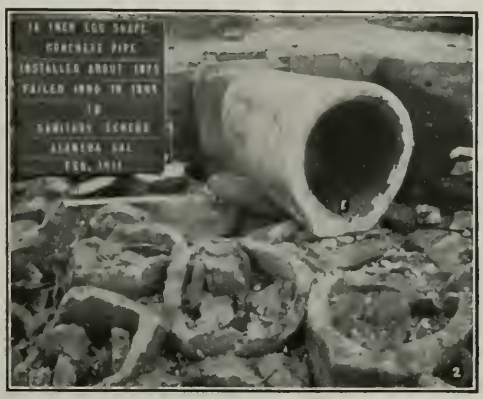


Fig. 2—Showing the failure of concrete pipe in sanitary sewers of Alameda, California.

remains in the sulphurous condition so as to properly "cook" the wood pulp. In the sewers this sulphurous acid H_2SO_3, a little later develops into a sulphuric acid, H_2SO_4, and this is the acid that eventually causes the disintegration of the concrete. This weak solution of sulphuric acid being imprisoned in the pores of the concrete attacks the calcium of the Portland cement, which upon being eaten away leaves the balance of the concrete a mere core of sand, gravel, and rock.

On the subject of the materials for pipe sewers the eminent sanitary authority, Rudolph Hering of New York, may be quoted. He writes:

"Due to the glazing of vitrified pipe, we get an advantage for them over cement pipes, which usually are not manufactured with an equal smooth surface.

"The structure of the material of vitrified pipe sewers does not change. Whatever it is when the pipe is examined at the point of delivery, it usually so remains. The structure of the material of cement pipe may undergo chemical and physical changes and decompose after years of use."

In this connection it is to be remembered that the concrete pipes are generally prepared for use in a construction camp of the variable materials that are available. There is no certainty that success in one locality is any assurance of success in another where the conditions of pipe manufacture as well as the character of soil-water and other factors, that may have a bearing upon the serviceability of the sewers, may be entirely different.

For a sanitary sewer, an experienced engineer, if allowed to make his own decision on purely engineering lines, will certainly choose vitrified salt-glazed sanitary clay pipe in preference to concrete; because he is justifiably surer of satisfactory results. Clay pipe is made in a factory—not in a concrete construction camp. Clay pipe ingredients are mixed the same year in and year out by the same men and the same machines, and not guessed at by wheelbarrow loads measured by an ever-changing crew.

Clay pipe is tamped by Cyclopean machinery under enormous pressure, not by hand nor novel patented contrivances. Clay pipe is dried under factory conditions perfectly controlled by a perfected drying system, —not by chance agencies of varying wind and sun. Clay pipe is cured by the positive unalterable effects of extreme heat of the pottery kilns,—not by the uncertain process of evaporation and crystallization which is never finished.

For these reasons vitrified salt-glazed sanitary sewer pipe has never had a real rival. Substitutes have occasionally been adopted by short-sighted consideration of matters which should not enter into a purely engineering proposition and which every engineer excludes as far as he can. In some cases, in the selection of the proper materials, it becomes necessary for the engineer to persuade his fellow townsmen to resist the allurements of an often-promised but problematic saving in the first cost, and advises them to look years ahead. He persuades them of the wisdom of paying for standard unimpeachable materials, even brought from a distance, rather than to allow sentiment to influence them toward a home made material of a less dependable nature.

Regarding the waterproofing of concrete, an investigation has been recently made by the Committee on the Treatment of Concrete Surfaces, appointed by the National Association of Cement Users, with Mr. L. C. Wason, of the Aberthaw Construction Company, as chairman. This committee tested thirty-nine waterproofing compounds now on the market. While many of these waterproof preparations gave good results when first applied, still all of them lose their waterproofing value in a few months when continually exposed to moisture. Furthermore it should be noted that these waterproofing compounds invariably contain an acid base, and will

Fig. 3—Final resting place of the last concrete pipe used for sanitary sewers in Alameda.

themselves cause the disintegration of concrete that is continually exposed to sewage.

These are the circumstances which make the engineer weigh carefully all attendant conditions before he ventures to depart from the use of materials such as the vitrified clay pipes when planning a system of sewers. In order to emphasize the fact that there have been failures of concrete pipe sewers under conditions in which the salt-glazed vitrified sanitary pipe has rendered satisfactory service a number of photographs with explanations and comments are shown herewith.

Fig. 1 is a photographic engraving of a portion of a concrete pipe sanitary sewer installed about 1885 in the City of Los Angeles, and uncovered for inspection in 1910.

For years past no new house sewers have been permitted to connect with this concrete pipe.

Los Angeles has a total of about 420 miles of sanitary sewers, including about 380 miles of vitrified salt-glazed pipe, the remainder consisting

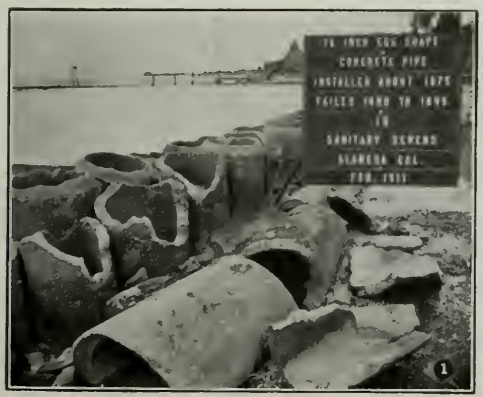


Fig. 4—Showing better part of the Alameda concrete pipe as they are today.

Fig. 3—Showing comparative condition of concrete and vitrified pipe removed from a sewer in San Francisco, February, 1911.

of brick sewers, old wooden sewers, and old soft porous concrete pipe.

Los Angeles is not using any concrete pipe in her new sanitary sewers, but is using some reinforced concrete pipe lined with vitrified brick in her very large storm water sewers that are dry during nine months in the year, and no sewage ever passes through them.

The concrete pipe shown in Fig. 2 was installed mostly in the residence part of Alameda in about the year 1875.

Every few years in places, there was trouble with the concrete sewers. The dilute acids in the sewage became imprisoned in the concrete shell causing the calcium to disintegrate and thereby permitting the sewage to percolate through the walls of the concrete pipe out into the adjacent soil and thus forming unsanitary, elongated cesspools.

Finally, there was found to be such a large percentage of the concrete pipe in a useless and unsanitary condition that it was deemed advisable to remove the entire system and replace the same with vitrified salt-glazed pipe.

At the end of about twenty years all concrete pipe was removed and replaced with vitrified salt-glazed sanitary sewer pipe.

Regarding this concrete pipe, the Alameda Superintendent of Streets writes: "In 1892 both the Park and Oak street sewers were taken up and in 1899 the Webster street sewer was taken up and the old cement pipe dumped at the foot of Park street on the beach."

San Francisco had practically the same experience and no concrete pipe has been used there for sanitary sewers since 1885. In that year 16 miles of concrete pipe were laid.

In 1911, when excavating to install pipe for the Auxiliary Water System, considerable concrete pipe and vitrified pipe were removed from the sanitary sewers with the results shown in the photograph marked Fig. 4.

The dilute acids in the sewage having carried away nearly all the cement, the concrete pipe is very soft and porous. Upon being uncovered the concrete pipe fell in pieces, while the vitrified pipe is as good as new, and will be used again.

Concrete properly made is recognized, the world over, as a most excellent building material for a multitude of legitimate purposes when used in masses; but thin shell concrete pipe in a sanitary sewer is entirely out of place as it is only a matter of a few years, more or less, before the concrete will weaken and give way from the gentle but persistent attack of the dilute acids and gases in the ordinary sewage.

Methods and Cost of Constructing East Park Dam, California

By E. G. HOPSON, Supervising Engineer, U. S. Reclamation Service, Portland, in Engineering and Contracting.

THE East Park Dam of the Orland Project of the United States Reclamation Service lies on one of the upper feeders of Stony creek, the principal tributary of the Sacramento River from the Coast Range portion of its drainage area. Like all of the Coast Range tributaries the summer flow of Stony creek is insignificant, although the winter and spring runoff is frequently excessive.

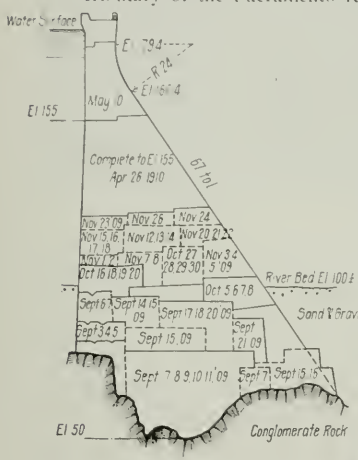


Fig. 1—Cross-Section Showing Sequence and Progress of Concreting, East Park Dam, Orland Reclamation Project, California.

The natural yield of Stony creek is ordinarily ample for all irrigation purposes up to and including May of each year, but for the remainder of the irrigating season an artificial supply is necessary. The Orland Project as at present approved includes about 14,000 acres of irrigable land in Glenn County, California, on both sides of the Southern Pacific Railroad. The Government engineers have computed that on the basis of nine years stream flow measurements that are on record there would have been required in an average year 32,000 acre-feet of storage water to supplement the natural flow of the creek. Owing, however, to the occurrence of seasons of unusual drought, the actual storage to be provided should exceed the above figure in order to provide a margin of stored water to be carried over from year to year. The records during the nine-year period above referred to, show that in order to maintain a full supply on the irrigable lands during dry years the draft on storage would have exceeded 40,000 acre-feet per annum on three several years. The reservoir at East Park has been built of a capacity of 46,000 acre-feet, which appears adequate for any except extremely abnormal conditions.

Fig. 2—Excavation for East Park Dam, Showing Rock Buttresses

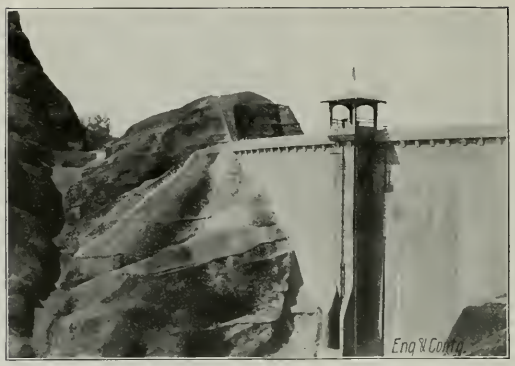


Fig. 3—Upstream Face of East Park Dam

The dam site is a notch in a great conglomerate dike or ridge extending in a north and South direction, characteristic of the folds of the Coast Range area. The river has cut through this ridge a deeply eroded channel, and during ages has built up its bed with sand and gravel deposits, so that the level of the stream today lies some 40 or 50 feet above the originally eroded rock bottom. It was decided by the Reclamation Service to adopt a solid concrete dam of gravity section built on a plan arching upstream to a horizontal radius of 275 feet. The spillway was located about one-half of a mile from the dam at a depression in the same ridge on which the dam was located. At three other points on the reservoir margin where low places occurred small earth dikes were built. The total cost of all construction work for dam, spillway and dikes was estimated at $198,000, including an allowance of 25 per cent for engineering administration and contingencies.

The construction work was contracted with the Stanley Contracting Company, of San Francisco, in October, 1908, the furnishing of cement, gates and other incidentals to be done by the United States. Work was commenced in the fall of 1908 and completed in July, 1910. The actual cost of construction and furnishing material, including engineering and administration, was $148,564, being about $50,000 less than the estimate. Additional work has, however, been found necessary to protect the toe of the spillway, the estimated cost of same being $30,000. The net cost of the completed works will, therefore, not be far short of $180,000, or $20,000 less than the estimate.

The maximum height of the dam is 140 feet above the foundation rock; the length along the top is 249 feet. Fig. 1 shows the maximum cross section of the structure and the methods used in building up and bonding the mass of the concrete. Expansion joints running entirely through the structure were built at intervals of 20 feet. Two outlets were provided: One 24 inches in diameter at a depth of 85 feet, and the main outlet, a 4 x 5 feet gate at a depth of 65 feet below the water surface of the reservoir. No notable difficulties occurred during construction. The principal material excavated for the foundation was sand and gravel. Two pumps—one 5 inches and one 6 inches—easily handled all of the water in the foundation pit. Fig. 2 gives a good idea of the excavation for the foundation. The excavation did not, as was anticipated, disclose a fault or plane of fracture or movement in the conglomerate dike, it being evident that the gorge originated only through water erosion. Fig. 2 shows the large natural rock buttresses disclosed by the excavation, which make an ideal bond for the concrete dam.

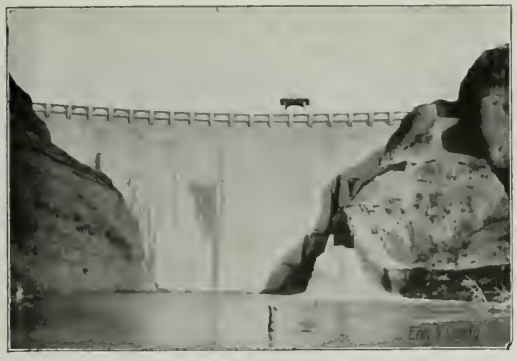


Fig. 4—Downstream Face of East Park Dam

Good sand and gravel for concrete were found in the immediate vicinity of the dam or within a hauling distance of about a mile. All material used was segregated by screening through ¼-inch, 1-inch and 3-inch circular holes. The engineers made mechanical analyses of the concrete aggregates during the progress of the work in order to secure desirable proportions in the mix. Adjustments were made in the proportions from time to time as required. All concrete was placed wet and well watered for ten days thereafter.

Figs. 3 and 4 show the upstream and downstream views of the completed structure, the latter being taken at a time when 250 second-feet were being discharged through the upper outlet conduit. Fig. 5 gives a somewhat more comprehensive view of the dam and reservoir.

The spillway shown in Fig. 6 consists of nine semi-circular reinforced concrete arches supported by massive abutments. This design was adopted with a view to securing the greatest possible length of spillway with a minimum of construction cost. The spillway length is 430 feet. Its estimated discharge capacity with a depth of 3.8 feet on its crest is 10,000 second-feet (about twice the maximum flood peak on record). The spillway was founded on shale rock and below the structure no attempt was made to protect this rock from erosion, it being considered that although some weathering and erosion might occur and ultimately a masonry lining be necessary, the shale was sufficiently resistant in itself to warrant deferring such protection for some time. The event, however, has disproved this forecast, as on March 7, 1911, the reservoir was entirely filled and about 2000 second-feet of water passed over the spillway. Experience showed that the shale below the spillway was inadequate to resist the erosive action of a large flow, deep channels being scored in its surface up to a point about 50 feet below the spillway structure itself. The United States is now extending the masonry of the spillway for a distance of about 200 feet, terminating the structure on the solid conglomerate rock.

Some facts and cost figures about the dam and spillway construction will probably be of interest, as the job is a compact one free from complications.

All cement was manufactured at Tolenas, California, cost price f. o. b. cars being $1.55 per barrel. The cost delivered at the nearest railroad station to the work was $2.05 per barrel. Cement and all material brought by rail required hauling over eighteen miles of mountain road. The average price of hauling cement, iron work and other materials was 32 cents per ton mile. The cost of road haul and storage for cement was $1.08 per barrel, so that the net cost delivered at the work was $3.13 per barrel.

In the main dam the total concrete built was 12,202 cubic yards, in which 12,382 barrels of cement were used, or 1.01 barrels per cubic yard of concrete.

Fig. 5. General View of East Park Dam and Reservoir

The mixture was generally proportioned at 1 volume of cement to 10 of the unmixed aggregates.

In the spillway a richer grade of concrete was used, the total yardage being 1456, in which were placed 1758 barrels of cement, or 1.21 barrels per cubic yard. The mixture was generally proportioned at 1 of cement to 8 of the unmixed aggregates.

The concrete was mixed in standard revolving mixers and handled by cars and track.

The principal item of construction was placing concrete in the dam and spillway as given in Tables I and II.

Table I.—Cost of Concrete in Spillway, 1456 Cubic Yards.

	Total Cost	Cost per cu. yd.
Cement delivered at railroad station (1758 barrels)	$3,620.99	$2.487
Cement—Hauling and storing	1,961.25	1.340
Forms—Material	373.15	0.260
Forms—Labor	1,418.50	0.980
Sand and gravel—Labor and Furnishing	2,438.80	1.670
Mixing and placing	1,388.70	0.960
Finishing	414.40	0.280
Total		$7.977
Preparatory expense	$ 161.35	$0.111
Interest on investment	1,259.00	0.869
Plant depreciation	318.95	0.218
Miscellaneous and supplies	654.71	0.447
Total		$1.635
Superintendence	$1,233.41	$0.846
Engineering	913.91	0.628
General administration	1,503.27	1.032
Grand total		$12.118

Fig. 6—General View of Concrete Spillway for East Park Dam

Table II.—Cost of Concrete in Main Dam, 12,202 Cubic Yards.

	Total Cost	Cost per cu. yd
Cement delivered at railroad station (12,382 barrels)	$25,333.86	$2.076
Cement—Hauling and storing	13,394.98	1.097
Forms—Material	2,054.39	0.168
Forms—Labor	5,143.45	0.424
Sand and Gravel—Labor and furnishing	7,074.20	0.580
Mixing and placing concrete	5,304.29	0.434
Finishing	429.60	0.035
Total		$4.814
Preparatory expense	$1,817.57	$0.149
Interest on investment	4,326.00	0.354
Plant depreciation	3,201.31	0.262
Miscellaneous and supplies	6,700.08	0.550
Total		$1.315
Stream control and unproductive work at quarry	$2,611.34	$0.213
Superintendence	7,530.02	0.617
Engineering	5,800.14	0.475
General administration	9,540.59	0.782
Grand total		$8.216

The dam has successfully withstood one season's test of full reservoir. Before water was backed up against the dam, sighting marks were placed on the rock abutments at either end of the structure and on the structure itself for use in determining whether any deflection took place under full reservoir pressure. Careful observations, however, failed to detect any movement.

There was a somewhat elaborate system of interior drainage contrived in the dam structure to carry off any water passing through the expansion joints, and deliver it into the outlet conduit. These drains are to a considerable extent successful, most of the percolating water being intercepted. In spite, however, of the drains and of the care taken in construction to avoid any continuous joints through the dam, seepage water forces its way through the masonry, following mostly horizontal plates between the several blocks of concrete. Fig. 4 shows the points where seepage water appears on the downstream face.

The amount of this seepage is inconsiderable, usually not being sufficient to maintain a continuous flow to the bottom of the dam. Its most serious defect is discoloration and unsightliness.

The dam was built under the direction of Mr. W. W. Schlecht, project engineer, assisted by Mr. F. H. Tillinghast, resident engineer. The writer was in general charge of the work. Other officials connected with the work are Mr. F. H. Newell, director; A. P. Davis, chief engineer; D. C. Henny and J. H. Quinton, consulting engineers.

* * *

The Cement Gun

THE "cement gun," a device for putting concrete in place by compressed air, is being used by the Quartermaster's Department, United States Army, in the Hawaiian Islands, and is proving of value in the construction of the ordnance shop at Fort Ruger. The apparatus was originally provided with a nozzle that became worn and clogged easily. These difficulties were overcome when Captain Edwards, quartermaster, invented a rubber-lined nozzle that gave complete satisfaction. The following description of the device as used in Hawaii is furnished by Captain A. B. Putnam, Corps of Engineers:

The cement gun is manufactured by a New York company, and consists of an air compressor, a 4-cylinder marine gasoline engine of 20 horsepower, a 1-inch wire-wound rubber hose with walls three-eighths inch thick for delivering dry sand and cement mixed, an ordinary garden hose for delivering water to the nozzle of the gun, and the gun or nozzle itself.

The nozzles originally furnished with the machine were not rubber lined and soon became abraded, so as to rended them worthless. The nozzle used by Captain Edwards, quartermaster, is lined with rubber (about three-sixteenths inch), so that no mortar sticks within. Furthermore, the rubber lining does not appear to become worn under use except very slowly.

A mixture, 1 to 2½, of cement and fine sand is delivered to the nozzle at 30 pounds pressure, and just before being discharged is met by a circular spray of water at 30 pounds pressure within the nozzle, so that the wet mortar is projected on the surface to be covered. The water supply is regulated at nozzle to obtain the correct consistency.

Triangular mesh is secured by staples to the studding of the structure, and is backed up by either heavy paper or wood placed so that the mesh will be in the center of a mass of stucco 1¼ inches in thickness when the spraying is completed. In dwelling houses the stucco is placed on the studding inside as well as outside, but is made only about three-fourths inch thick inside. Smoothing is done by shooting a fine light spray of wet mortar. No finishing is done with the trowel. The finished surface inside is to be painted. The resulting stucco is very hard and makes a fair appearance, though it is necessarily rough. So far, provided the mesh is placed so that edges overlap, I have observed no cracking. It should be noted that this stucco is merely a thin wall of plaster, and bears no strain except that due to its own weight.

When stucco is placed inside and outside, the paper backing, 10 pounds per 100 square feet, is left in the wall. When only an outside is placed, the wood or paper backing is removed when the stucco has hardened.

One gun is placing 90 square yards, 1¼ inches thick, per working day. The cost at present including cost of studding and backing in place, is $1.13 per square yard.

The hose now in use is stronger and heavier than the one supplied with the outfit, and the nozzle is different, being about twelve inches long,

as against about 4 inches as supplied, and being rubber lined throughout, so that the mixture never touches metal. There has been but little work done here as yet, so that cost data is not complete, and it has only been since Captain Edwards applied a new nozzle that the gun worked well.

Tests are to be made by the Isthmian Canal Commission to determine the value of cement mortar, applied to iron plates by the "cement gun," as a preservative of iron at Panama. Twelve plates, 63.8 by 14 inches, have been coated with a 1 to 3 mortar of cement and sand, after they were cleaned to gray metal by the sand-blast process. Six of these have been covered with a ½-inch coating, and the remaining six with a 1-inch coat on one side and a 1½-inch coat on the other. Three plates of each kind have been sent to Balboa, and three to Cristobal, where they will be kept immersed in salt water to test the mortar method of preventing corrosion. Two plates of each kind will be taken from the salt water bath at the end of three months, and one-half of the coating will be removed to determine the condition of the metal. The duration of the test for the balance of the plates will be determined later.

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Seventeen Acres of Concrete for Reclamation Work

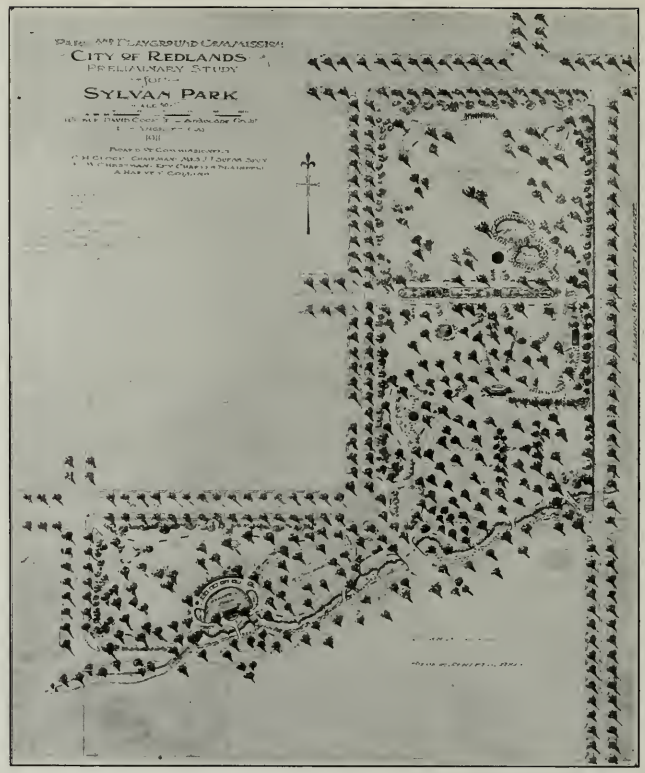
OF great interest is the reclamation work that has just been completed in the Lisbon District in Yolo County, State of California, where a reinforced concrete levee has been built along the entire south side of the district to remove the possibility of that levee being beaten down by the waves when the tule basin is full. It is claimed this is the only concrete levee for reclamation purposes in the United States.

Lisbon District, numbered 307, has no trouble in keeping up its river levee or its west levee, but the south levee, less than half as long, built six or seven feet above the highest known high water, was beaten down six or eight times, flooding the district, which embraces about 6000 acres of rich river land. When Engineer P. N. Ashley first proposed concrete levees and mentioned the cost the Directors of the district were opposed, but they finally joined in his opinion that no other form of construction would stand the washing of the great waves that roll over the Yolo Basin in times of storm.

The cost of the two and one-half miles of south levee has been $80,000 for the concrete facing, and the work has, it is estimated, made the lands in the district worth from $400 to $500 per acre. Ten thousand tons of crushed rock from the Natomas Consolidated were used in the work, and this and other materials were hauled to Freeport by rail and dumped on a barge to be transferred across the river, then deposited on trains of small cars by a dredger, the cars conveying them along the top of the levee to the concrete mixing plants, two of which were operated.

The levee for its entire distance across the south end of the district is faced with a strip of concrete to a vertical height of twenty-three feet and nine inches, but on the slant it varies from 46 to 74 feet in width. The area of concrete is seventeen acres. The concrete is four inches thick, with wire reinforcements both ways and with tongue and groove piling at the bottom and a key of concrete eight inches deep the whole length of the levee that helps to keep the great slab from sliding. Wooden strips are set in at intervals to allow for expansion during hot weather. The concrete extends six feet above high water mark and the earthen levee goes on up several feet higher.

The district will now proceed to make its entire river levee eight feet higher than high water.



Preliminary Study for Park and Playground, Sylvan Park, Redlands, California
Wilbur David Cook, Landscape Architect

San Francisco Architectural Club's Annual a Success

ONE of the most successful entertainments ever given by the San Francisco Architectural Club was held on the evening of December 7th, at the Scottish Rite Auditorium. At the close of the musical and literary program dancing was enjoyed until a late hour. The various committees deserve a great deal of praise for carrying out the various features of the affair so successfully. These committees were as follows:

Entertainment Committee—Barker W. Estey, L. J. Cohn, Tobias Bearwald, L. A. Larsen, John Beuttler.

Reception Committee—W. B. Faville, A. G. Headman, T. Bearwarld, E. H. Hildebrand, G. W. Kelham, F. H. Meyer, Willis Polk, C. R. Ward, H. E. Nye.

Finance Committee—James P. Dwan, Wm. J. Helm, A. E. Schroeder, Carl Warnecke, Geo. Greenwood, Chairman.

Program Committee—W. H. Crim, Jr., B. J. Dallas, W. B. Faville, Jas. A. Magee, Geo. R. Thibault, H. Thomsen, F. H. Meyer, R. Monson, Tobias Bearwald, Chairman.

Dance Committee—John Beuttler, George Greenwood.

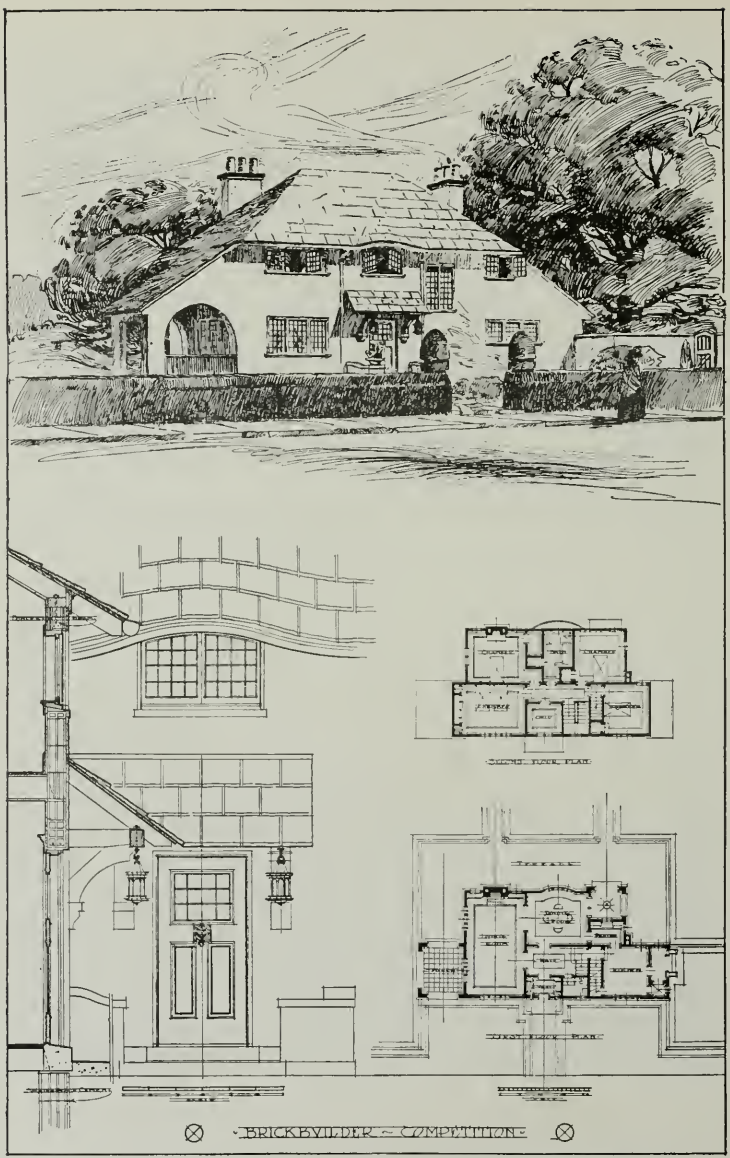
Aides—Edw. Flanders, Chandler Harrison, Howard Schroeder.

Detail Perspective, New York Connecting Bridge Across East River
Palmer & Hornbostel, Architects

The Marsh Apartments, San Francisco
Henry C. Smith, Architect

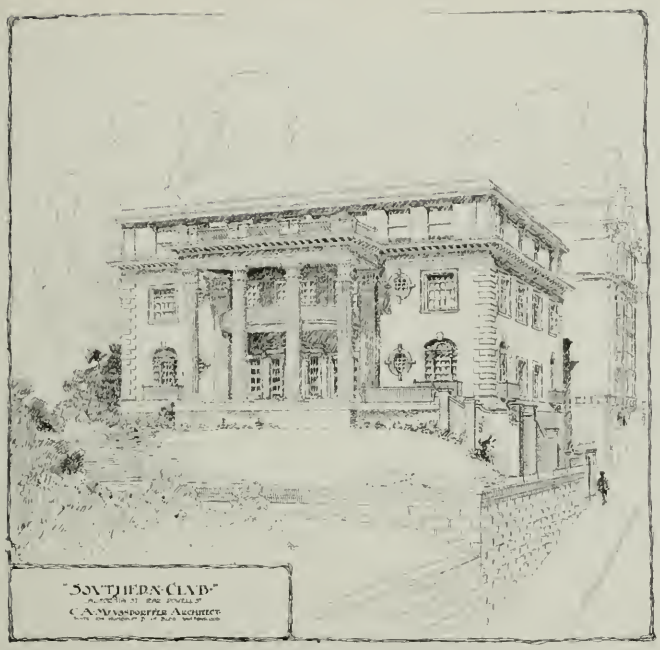
House for Mr. E. S. Harkins
Lord & Hewlett, Architects

Thesis Design, University of Pennsylvania *Design for an Episcopal Cathedral* *E. H. Hildebrand, Architect*



Mention Design

Submitted by H. S. Hazen, Jr., Boston, Mass.



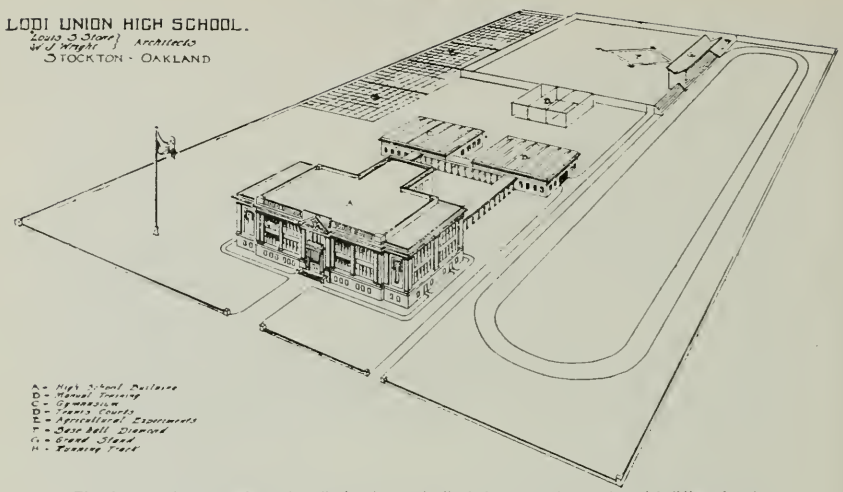
A Southern Colonial Style Clubhouse

THE plans of Architect C. A. Meussdorffer for the new home of the Southern Club on Nob Hill, San Francisco, show a distinctly Southern Colonial style, with broad columned portico and balconies, overlooking a large lawn, which will be laid out in landscape gardening, having for its central feature a monument of Gen. Robert E. Lee. The base will be carried up from the street to the portico floor in a warm-colored tapestry brick, and the body of the building will be executed in Caen stone and relieved with iron balconies at the lower tier of windows.

The main entrance will be through a massive brick gateway, and along a terraced stairway and approach to the portico through a Colonial lobby to the general office on the main floor.

The interior will be arranged in a unique manner, with the lounging-room, dining-room, kitchen and service-rooms and general clubrooms on the top floor, utilizing this space for the purpose of securing the benefit of the marine view. The billiard-room and bar will be located on the floor just below the dining-room and kitchen, and these will be connected by means of a dumb waiter. The remainder of the building will be devoted to living and sleeping-rooms and baths for the use of members.

There will be an automatic electric elevator, which will continue to the basement, and a tunneled passageway from California street to this elevator will form an additional and convenient entrance.



The above cut is a somewhat unique "aviator's eye-view" of the proposed grounds and buildings for the Lodi, Cal., Union High School district, drawn by Wright & Stone, architects. The drawing shows a twelve-acre plot blocked out for a group of school buildings, baseball grounds, football field, running track, tennis courts, basket ball, etc. The estimated cost of carrying out the scheme and erecting the several buildings is $150,000.

A Ballade of Building

A new house seemed the natural thing
When John had made his modest pile.
So first we wrote an endless string
Of "must haves." Then we studied style.
John favored shingles. I loved tile
For roofs, but John thinks plaster's cold,
And brick's too stubborn. So I smiled,
"I think we'd better stand the old."

Nan likes colonial, with a wing;
Tom saw a villa on the Nile—
"A corker!" he declares. I cling
To baths and sleeping porches, while
John's firm for fireplaces. Oh, I'll
Be bound no house will ever hold
The things we want! Though we revile,
I think we'd better stand the old.

Our lot's unbought; we're balancing
'Twixt hill and valley sites. "A mile
From town, rules John, "where birds will sing;
A pool, a pergola, a dial."
For me the city has its wile.
Who'd think such problems would unfold!
Well, though it is a daily trial,
I think we'd better stand the old.

ENVOY.

Friend, do not trust (put this on file)
Your dream to wood or stone; untold
The snares that builders' steps beguile;
You'd far, far better stand the old.

—Julia B. Green, in Century.

Heaviest Swing-Span Steel Bridge in the World

JUST outside the city of Sacramento, California, the Southern Pacific Company is erecting a steel bridge across the Sacramento river that contains the heaviest swing span of any bridge in the world. This span is 400 feet in length, and its weight is 6,300,000 pounds. The entire bridge, however, will weigh more than 10,000,000 pounds when it has all been placed in position upon the heavy concrete piers.

There are only two steel bridges in the world that have swing spans that exceed the new Sacramento river bridge in length. One is across the Willamette river and is a part of the Spokane, Portland and Seattle Railway system. Its weight, however, is only 5,400,000 pounds, 900,000 pounds less than that of the Sacramento river bridge. The Omaha Terminal Company operates a large steel bridge across the Missouri river that has a swing span 520 feet in length, but the steel is of much lighter construction, the weight being only 5,100,000 pounds.

The new Sacramento river bridge of the Southern Pacific is a part of the double tracking of the Harriman lines. It will contain not only two tracks for the trains, but a concrete wagon and automobile road. The American Bridge Company, which is fabricating the steel work for the structure, have records of numerous heavy swing spans, but none that can equal that of the new Southern Pacific bridge.

The piers for this structure were sunk by the pneumatic process, under the direction of the Southern Pacific engineers, and the construction of the abutments, as well as the erection of all of the steel superstructure, is being done by the company's engineering forces.

* * *

Architectural Hodge-Podge

WE moderns are overfond of turning back to the work of other times. We imitate its technique, but generally ignore its principles. The best features of any art cannot be imitated, for they are individual in their origin, and are the outcome of a particular condition of mind.

It is an old Chinese proverb that "Men may make an encampment, but it is the woman who makes the home." Now the present-day woman, after the fashion of Dick Swiveller's Marchioness, "likes to make believe a good deal," consequently our domestic architecture is a sort of hodge-podge culled from all the ages.

The introduction of too many and varied styles is apt to make for unrest, that quality much to be avoided in a home.

Far too often one sees the good work of some competent architect utterly spoiled by the ignorant caprice of the average woman, who insists upon incongruous details, or treatments and decorations quite unsuitable to the materials used. Perhaps, for instance, she may have set her affections upon a huge fieldstone fireplace she has seen somewhere and thought "so artistic!" So, quite ignoring the fact that the hall of her unpretentious bungalow, or suburban house is in cedar, rubbed to a fine finish, in goes this massive chimney, quite out of scale with everything else.

For our ancestors, who had oxen drag into their halls great logs to feed the fire before which the stag was roasted whole, the vast open fireplace was all very well, but, nowadays, unless we are blessed with elastic purse strings, or have an unlimited wood supply, it is in quite as insincere as an enamelled complexion.—House Beautiful.

The Outstanding Advantages of Brick

AS gold has been the standard of value and the basis of practically all monetary systems, so has burned clay been the standard material and the basis of building operations for centuries.

Thousands of years ago, the whole civilized world knew that no material was so adaptable to all requirements, so durable under all conditions and so susceptible of a high degree of artistic finish.

However, we often forget the wisdom acquired by experience and are led astray by the desire for novelty and the use of new materials which promise much. Even as statesmen and politicians have sought to change the gold standard, so have we sought to change the building material standard and have experimented with various materials, a large number of which are worthless, and none of which however valuable in their own special places, are satisfactory as substitutes for brick. Times and progress combined are rapidly clearing our streets of these experiments in unsuitable material and we note with pleasure that practically all our new buildings are of brick and terra cotta. These buildings represent the perfection of the clayworker's art and are a lasting satisfaction to their owners.

Ten thousand years ago men made brick. To be sure these were only sun dried and could not long resist exposure to the weather. In course of time they learned to face these sun dried walls with burned brick. In the ruins of Babylon and other ancient cities these face brick are found elaborately ornamented with colored glazes in as perfect a condition as when first laid. Whoever was the discoverer of the process of burning clay into a hard durable substance should be accorded the honor of being one of the greatest benefactors of the building industry and consequently of humanity. It has been said that buildings constitute a history of the civilization of the world; and if this is true, then brick are the type with which this history is printed.

From that distant time down to the present, the use of brick and other burned clay products has been continuous, and at different times and in different countries has attained a height of perfection and beauty almost unbelievable to one not thoroughly familiar with its possibilities.

All old Italian cities are full of the most beautiful brick and terra cotta work; in Germany it has been used and in Holland its use was and still is almost universal. Spain is full of fine buildings of molded clay, while England has gone so far that elaborate carving is done on brick work of a fine, firm texture—carving such as we would think possible only in stone.

All of the old buildings show that brick is not only durable but that it is a material which, like certain wet goods, improves with age and acquires additional charm with each passing year. This feature should be a great comfort to the architect when his building proves not to be the thing of beauty he had expected. If it is brick he knows that Nature will kindly take it in hand and after he has been dead for years some artistic soul will discover and disclaim over the wonderful coloring and blended tones of the walls.

But in accomplishing this result Nature does not take kindly to man's interference and if any assistance is offered it must be done very carefully and tactfully and it must not be in the form of paint. Often, we have seen walls just beginning to bloom with the subdued tones of age "brightened up" with a thick coat of paint which utterly kills all the life, character and beauty of the material.

Paint is a good thing in its place, and like the mantle of charity may be made to cover a multitude of sins; but there should be nothing to cover in a brick wall. We should not forget that both the durability and beauty

of the brick work depend not alone on the making of the brick, but upon the mortar, the bricklayer and the man who designs the building.

The best brick will make a poor wall if improperly handled, and, by the use of good mortar and intelligence, much may be done with an inferior grade of brick. This does not, however, excuse the use of poor brick, for the result can never be entirely satisfactory. You know all about the making of the brick and how to obtain the desired color and texture; the bricklayer probably knows little about the processes through which the brick passes before reaching his hand, but he does know how it should be laid to secure the best results. While I, as the architect, may know even less than the bricklayer about the manufacturing process, yet I should know more about design; and our combined labor produces a complete building impossible to any one of us alone.

One important feature in the success of brick work which I should like to bring out may not interest you except as an additional means to successful building. This is the question of bond. Bricklayers, and architects as well, are just beginning to appreciate the importance of bond from the point of durability as well as of effect. Have you not, at a fire or even on some old building, often seen whole sheets of face brick peel off leaving exposed the real wall of common brick behind?

It is evident that such facing, merely tied on, can add little if any strength to the wall and it is a source of danger in case of accident. Why should we try to conceal the necessary bond as though it were something improper, a thing not to be seen or mentioned in public?

In the old country numerous varieties of bonds are employed and they add greatly to the interest and beauty of the work not to speak of the strength gained by having the wall tied together into one homogeneous mass. Let us therefore have a bond, not invisible clipped corners or ties of wire and strips of metal, but a bond, visible and real, with each individual header doing its duty, undisguised. They give the wall a character and dignity which it would otherwise lack.

In such a case a careful study of mass and detail suitable to the material and an intelligent use of color in joints would accomplish a most dignified and attractive result.

Abraham Lincoln's remark about people might apply equally well to brick. He said, "God must have loved the common people, he made so many of them." Are not burned clay products almost the universal building materials? Our wheels do not skid so badly on brick pavements, our walks are often laid of brick, our buildings have foundations of hard vitrified brick, the walls above are of brick, the floors and partitions of hollow tile and the whole is crowned with a tile roof, a complete and beautiful structure which needs no repairs and fears no fire. Even when the building shows a front of granite or marble in most cases we find the body of the wall to be of brick. This, in the case of a severe fire, is the only part to escape destruction. Would it not be much better to use the one material throughout, thereby gaining in honesty of construction, strength, durability and artistic effect? The durability of brick is beyond question and the variety of color and texture is so great that it would seem impossible to devise more. The manufacturers, however, constantly studying for new effects, are every month surprising us with new varieties. It is now possible to obtain brick of a character to suit any style of architecture and it is a waste of money to send abroad for costly stone when we have such an unlimited supply of a better material at hand. Let us hope that the near future will develop the use of brick to such an extent that a frame building will be as rare as a marble one is now.—A. R. Van Dyck, in Brick.

State Engineer Accuses San Francisco Firm of Nervy Practices

By HUMPHREY G. GREENHILL.

In the following article Mr. Greenhill has endeavored to present the facts in a little bidding affair at Sacramento, free from bias, and without an attempt to injure anyone. Giving so much publicity to this matter is prompted by the question: "Were the tactics pursued by the Charles C. Moore Company entirely within the scope of fairness, and has this firm set an example that less influential corporations may be expected to follow? Mr. Moore's prominent position as head of the Panama-Pacific Exposition, naturally places him in the limelight, and what he or his company may do is of interest, for a man's public deeds, in a considerable measure, must be judged by his private practices.

EARLY in September the Engineering Department of the State of California advertised for bids for boilers, boiler-room auxiliaries and piping for the power-plant in connection with the heating system for the Stockton State Hospital. Bids were asked for as a whole, meaning complete equipment, auxiliaries, foundation, etc., and separate bids for the boilers alone. The firms who submitted bids, and the prices, were as follows:

Chas. C. Moore & Co.—Complete job, $21,000; separate bid, three Stirling boilers, $10,100.

Pacific Fire Extinguisher Company—Complete job, $22,655; no separate bid.

United Iron Works, of Oakland—Complete job, $20,473; separate bid, three Heine boilers, $11,050.

Union Iron Works—No bid on complete job; separate bid, three Risdon Water Tube boilers, $11,890.

California Hydraulic Engineering and Supply Company—Complete job, three Flaner boilers, $20,980, and alternate bid, complete job, with three sectional header boilers, $21,460; three Flaner boilers, $8670.

Frederick C. Roberts & Co.—Complete job, three Risdon boilers, $26,600, and alternate bid on complete job, three Keiler boilers, $23,750.

The bid of Charles Roberts & Co. being so high, it was thrown out at the opening and the check returned.

State Engineer Ellery, not being satisfied with the bids, called in R. F. Chevalier as consulting engineer, who, after studying the matter, recommended the purchase of the Stirling boiler from Chas. C. Moore & Co. (as the most efficient boiler that was bid on), only at a lower figure than submitted in their bid, and the other equipment from the United Iron Works, and further recommended that the actual work of laying the trenches, foundation, etc., be done by the State, employing the inmates of the Stockton State Hospital, in this way it would mean a saving of approximately $3000.

Ellery notified all bidders that the figures had run too high, and that he would re-advertise for new bids. At this Mr. Randolph, of the United Iron Works, told Ellery that he had included $500 for "inspection" in his bid, which could be taken off. Messrs. Hawkins and Day, of Chas. C. Moore & Co., then went to Mr. Ellery's office and stated that they wanted the work and were "willing to talk business." Ellery asked them what price they would make on their boilers alone, mentioning the fact that Randolph had taken off $500 from his bid. Hawkins, after figuring, stated they would take off $557 for oil burners, and $1500 for foundation and trench work. Ellery informed them he would think it over and see them

at the Sacramento Hotel that evening. Meeting them that evening in the hotel, Ellery went over the whole deal again, and had Hawkins write down on paper just what he would do. Hawkins did so, making the net price of $8043 for the boilers, less the oil burners, trench work, etc. Ellery then told them that it was satisfactory, and for them to call at his office in the morning and sign the contract. Calling at Mr. Ellery's office in the morning, Hawkins and Day advised him that they would not take the contract at the price agreed upon the evening before, and Ellery replied that he would then re-advertise for new bids. Hawkins then went to see Dr. Hatch, State Superintendent of State Hospitals, and asked him to use his influence in having their bid accepted.

Elgin Stoddard, of Chas. C. Moore & Co., then wired the following telegram to the State Board of Control, which called a hearing of the case for the next day:

Telegram.

October 16, 1911.

State Board of Control, Sacramento, Cal.

Have learned Ellery proposes reject all bids boilers and equipment for Stockton State Hospital. This would certainly be injustice to us and contrary State's best interests. Will you stop such action until receipt our letter mailed tonight?

(Signed): CHAS. C. MOORE & CO., Engineers.

The letter follows:

San Francisco, October 16, 1911.

State Board of Control, Sacramento, Cal.

Boilers for Stockton.

Gentlemen—We call your attention to the bids recently received by the Engineering Department of the State of California covering boilers and power plant equipment for the Stockton State Hospital.

We have learned that Mr. Ellery proposes to reject all of the bids submitted and to re-advertise for new bids. Inasmuch as it can be easily proven that such an action on Mr. Ellery's part would not only work an injustice upon us, but would be decidedly in conflict with the best interests of the State of California, we respectfully request that you carefully investigate the bids submitted, so as to prevent their being rejected in case you find our claims in the matter justified.

You will find, by looking over these bids carefully and taking account of the various extras specified, that our bid is actually the lowest submitted, in dollars and cents, and we would ask you to remember in noting this comparison, that our bid includes Stirling boilers, recognized to be a superior type of steam generator for oil fuel service, and used most extensively—not to say almost exclusively—in every locality where crude oil is the prevailing fuel.

We would also ask you to note that the other bids submitted include boilers undeniably of the cheapest make, and not to be compared in any respect with the equipment offered in our proposal. Some of the types of boilers included in various bids have practically no installation on the Coast.

The character of the piping and auxiliaries contemplated in our bid is in keeping with the high-class nature of the boilers proposed. We would therefore ask you to note that we actually are proposing to furnish boilers, auxiliaries and piping of the very highest grade—equal to anything built—at a price actually less than that for which some of the cheapest equipment manufactured is being offered. In addition to being technically the lowest bidder, we wish to state that we can easily prove to your satisfaction that the price we have submitted upon this work was extremely low—much below that for which we would be willing to accept the same business from a private concern. We want to submit actual proof of this assertion.

It is a well known fact that we are regularly securing large advances in price over such equipment as has been offered by competitors on this job, and this alone should serve as a good indication of the nature of the price we have submitted. We can certainly assure you that there will not at any time be any chance of securing a better price on the machinery proposed.

We have made a special effort to secure this business from the State, and have quoted a price which is absolutely rock bottom.

Perhaps you will recollect that this plant has been advertised for, and bids received, on three successive occasions. The State actually requires these boilers. We submit, therefore, inasmuch as we have presented the lowest bid, that the equipment we propose to furnish is of the highest grade manufactured; that the price named is exceptionally low and can certainly never be bettered; that the State actually requires the boilers at the present time, and that the necessary action should therefore be taken to prevent these bids from being rejected and proper advantage taken of the bids we have submitted.

All we wish to ask at the present time is that you will see that these bids are not rejected, and arrange an interview for one of our engineers with the Board of Control of the State of California, simply giving us an opportunity to prove the above facts.

Trusting you will take prompt action in this matter and advise us at your earliest convenience, we are,

Yours very truly,

CHAS. C. MOORE & CO., Engineers;

(Signed): Elgin Stoddard, Vice-President.

The meeting was attended by Randolph of the United Iron Works, Petersen of the Union Iron Works, Armstrong of the California Hydraulic Engineering and Supply Company, and Messrs. Hawkins and Day of Chas. C. Moore & Co. All bidders on the job were ignorant of the fact that Chevalier was the consulting engineer in the case, and showed great surprise when he was called into the meeting by the State. After several hours of argument, in which every bidder argued that they were actually the lowest bidder and entitled to the job, a recess was called. At this recess, Armstrong, Hawkins and Day tried to get Petersen of the Union Iron Works to join them in "doing up" Chevalier before the Board of Control. Petersen refused, and immediately told Ellery of what was being planned. It was the belief of Chas. C. Moore & Co. that Chevalier had advised the rejection of the bids in order to "jockey" the deal so that the Parker Boiler Company could bid on the job.

Chevalier had advised the Board of Control of his doing work for the Parker Boiler Company, and that he was frequently employed by them, but had not talked to the boiler company at all on this particular job. Ellery advised the Board of Control that the Parker Boiler Company had received a set of the specifications, but had not bid on the job.

At the meeting of the Board of Control later in the afternoon, Hawkins asked them if they knew that Chevalier was "connected" with the Parker Boiler Company. The Board of Control replied that they were well aware of the fact, and that it did not make any difference in this case. (Chas. C. Moore & Co. are not aware to this date that Chevalier recommended the purchase of their boiler to Ellery.)

The Board of Control decided to sustain Ellery. Elgin Stoddard then 'phoned the Board of Control, asking if they would suspend their decision until they heard him on the case. This they granted, and Stoddard appeared before the Board a few days later and offered the same arguments as advanced by his men, endeavoring, it would seem, to disprove both Ellery and Chevalier in the eyes of the Board of Control. Stoddard read a telegram from his agent in Los Angeles, stating that Chevalier had submitted bids for the Parker Boiler Company on a certain job in that city, but this was already known to the Board, and they again sustained Mr. Ellery in throwing out all bids.

On November 2d Stoddard mailed to the Board of Control the following letter, asking them to insert certain paragraphs in the new set of specifications which were then being compiled, and on which new bids were to be called for:

San Francisco, November 2, 1911.

Messrs. Johnson & Neylan, care State Board of Control, Sacramento, Cal.

Gentlemen—Referring to my conversation with Mr. Johnson, over the 'phone, about some paragraphs that we would request that you have inserted in the new specifications for the Stockton State Hospital, I herewith enclose a memorandum of these which we would very much appreciate your having incorporated in the specifications, in addition to the requirements that were called for in the last specifications on which you have just rejected bids.

It is my understanding that when the new specifications appear, it is your intention that there will be required to be furnished substantially the same amount of equipment as was covered by the specifications for bids just rejected, and that this equipment would be of the same character as before, and that the reduction in price that is expected will be upon such a specification, but neglecting such actual labor and material as the State itself can more advantageously furnish under separate contracts, or by arrangement for the use of their own labor. In other words, it is proposed only to adopt a more favorable method of securing the same equipment.

The paragraphs that I hand you herewith merely require questions to be answered that are essential in the comparison of boilers as affecting their safety, durability and cost of operation and maintenance. Such information is frequently asked for by consulting engineers and large power users in the specifications for the sake of facilitating comparisons and rendering possible the proper tabulation of comparative features of construction and design.

There being already paragraphs in your specifications regarding economy, we have not proposed anything further of this character.

I trust that you will see your way clear in permitting these paragraphs to be used.

Yours very truly,

(Signed): ELGIN STODDARD.

Ellery refused to consider the paragraphs suggested in the letter, and stated that their insertion would discredit all straight pipe boilers, which would virtually place the job in the hands of Chas. C. Moore & Co. Two other engineers, Mr. Tempest, mechanical engineer, and Mr. Chevalier, stated that to follow Mr. Stoddard's suggestions would have a strong tendency to favor the Stirling boiler, which is handled by the Chas. C. Moore Company. Ellery branded the idea as a "nervy piece of work to corner the job."

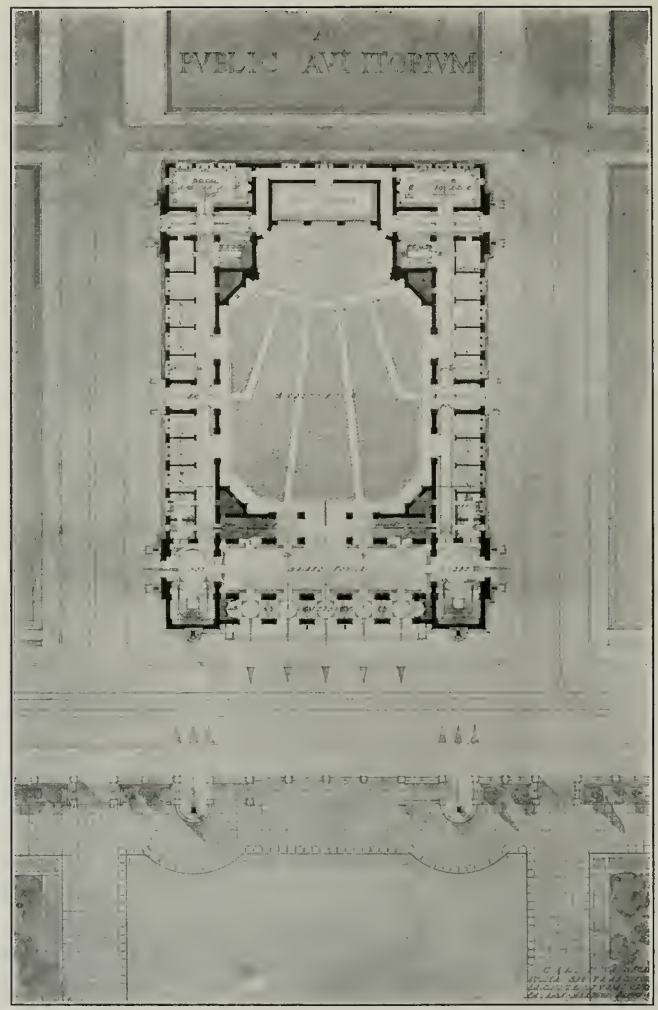
* * *

More About Motor Trucks

PACIFIC Coast contractors and building material people manifested considerable interest in the article on motor trucks which appeared in the November issue of The Architect and Engineer. That the subject is a live one with the progressive material man, is apparent from the number of inquiries made in regard to the quality, style and price of trucks on the market. Dealers who are using trucks in place of horses and wagons are unanimous in declaring that they create a great saving and that the hauling is done in much better shape than with teams. The most important drawback has been that the trucks were too expensive for short hauls and that it would not pay a man to keep a motor truck when he had only short hauls. This is true in most cases and it is evident that the only economic use for motor trucks at the present day is for long hauls. The sand and gravel dealers have found, however, that they have many short hauls up very steep grades and that the automobile is less expensive where there are steep grades to be conquered.

* * *

"I went fishing the other day and forgot my glasses," said the near-sighted man. "Well, can't you drink out of a bottle?" demanded the man with the impressionistic nose.



A Public Auditorium
San Francisco Architectural Club Atelier
C. F. Warnecke, Mention *Arthur Brown, Jr., Patron*

ARCHITECTURAL LEAGUE
OF THE
PACIFIC COAST (Official)

OFFICERS FOR 1911.

President,
ALFRED F. ROSENHEIM, Los Angeles, Cal.
Vice-President,
E. F. LAWRENCE, Portland, Ore.
Jury,
JOHN GALEN HOWARD
LOUIS C. MULLGARDT
LORING P. RINFORD
GEORGE W. KELHAM JOHN BAKEWELL, JR.

Secretary,
JOHN P. KREMPEL, Los Angeles, Cal.
Treasurer,
W. R. B. WILCOX, Seattle, Wash.
Education Committee,
E. F. LAWRENCE, Portland, Ore.
DAVID J. MYERS, Seattle, Wash.
MYRON HUNT, Los Angeles, Cal.
ROBERT FARQUHAR, Los Angeles, Cal.

NOTE—The members of the Jury are also members of the Education Committee.

RESULTS OF COMPETITION WORK FOR OCTOBER-NOVEMBER

Student Work.—All mentions are credited by the Society of Beaux Arts Architects, New York. First mentions and medals must be confirmed by the New York Society before being credited by them.

The season of 1911-1912 of the Society of Beaux Art Architects has opened. Problems have been received from Seattle, Los Angeles, Reno and San Francisco, some of which are shown in this issue.

Class B Analytique (Order Problem)—A Monumental Mantelpiece.
Atelier: San Francisco Architectural Club.

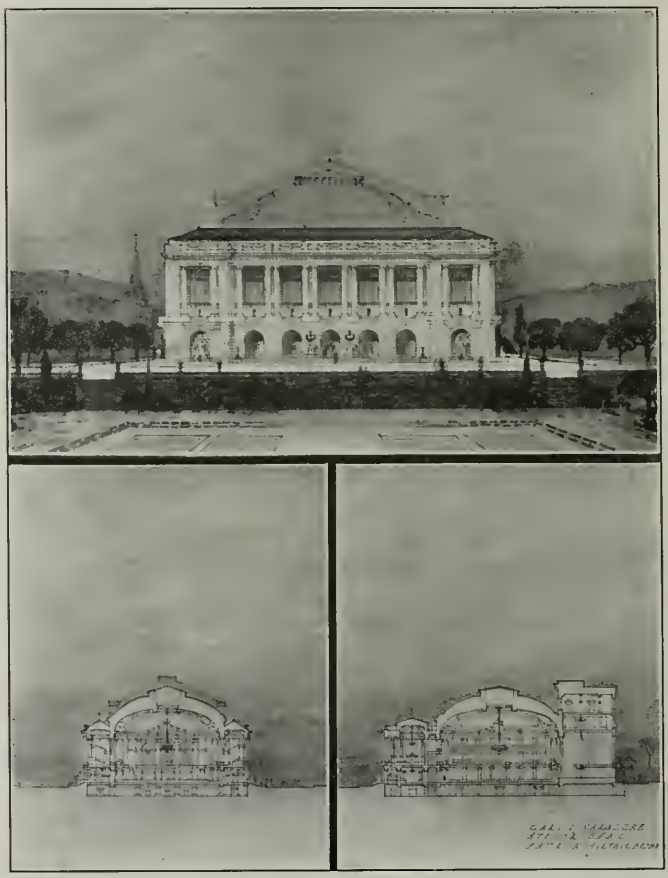
Name.	Award.	Patrons.
H. A. Schultz	Mention, placed	Arthur Brown, Jr.
C. Tantau	" "	" "
G. L. Brown	Mention	" "
W. Ganen	"	" "
A. Hewetson	"	" "
H. A. Thomsen	"	Geo. Kelham.
T. L. Pflueger	"	" "
C. T. Hoag	"	Los Angeles Architectural Club.
F. F. Rasche	"	" " "
C. G. Mark	"	" " "
G. N. Alear	"	" " "
J. W. Brooks	"	" " "
R. M. Cassidy	Mention, placed	" " "
P. D. Richardson	Mention	Seattle Architectural Club.

Class B Project (Problem in Design)—A Public Auditorium.
Atelier: San Francisco Architectural Club.

Name.	Award.	Patrons.
H. C. McAfee	First mention	Arthur Brown, Jr.
C. I. Warnecke	Mention	" "
R. Manson	"	" "
M. W. Morrison	"	" "
H. Michelson	"	" "
E. L. Frick	"	" "
F. P. Davis	"	Los Angeles Architectural Club.

The San Francisco Architectural Club atelier have moved to their new quarters, and have fifty-five registered students. Messrs. Arthur Brown, Jr., and George Kelham are patrons. The following have been elected officers of the atelier:

EDWARD L. FRICK, Massier. CARL I. WARNECKE, Sous Massier.
CHANDLER I. HARRISON, Sous Massier.



Elevation, a Public Auditorium
San Francisco Architectural Club Atelier
C. F. Warnecke, Mention *Arthur Brown, Jr., Patron*

A Monumental Fireplace
San Francisco Architectural Club Atelier
Howard A. Schulze, Mention, Placed *Arthur Brown, Jr., Patron*

A Monumental Mantelpiece

R. M. Cassidy, Mention, Placed *Los Angeles Architectural Club Atelier*

The Clark Mansion

It is said that former Senator W. A. Clark is going to present the city of New York with his $7,000,000 Fifth avenue home which has only recently been completed after eight years of work. It is stated to be the costliest residence ever built in America. The taxes assessed on it by New York City amount to more than $200 a day.

The mansion contains 121 rooms, 31 baths and four picture galleries. No building in the world, according to experts who have inspected the interior, carries so much bronze as has been worked into this mansion.

The building contains one of the largest pipe-organs in the world, which was installed at a cost of $300,000. There are $2,000,000 worth of pictures and $500,000 worth of rugs.

Among the Architects

American Institute of Architects

(ORGANIZED 1857)

Next Convention in Washington

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Oakland Architects' Society

Meets Third Monday Each Month.

PRESIDENT.....LOUIS S. STONE
SECRETARY-TREASURER.....WILLIAM J. WRIGHT

Clarence Ward Resigns

Clarence R. Ward, architect, has resigned from the State Board of Architecture. Press of private practice and business connected with the Panama-Pacific International Exposition are such as to afford him too little time to devote to the important business of the State Board.

"Refuse Notice"

Every editor has received a "refuse notice." The Postmaster sends them to the editor. For instance, there is a man by the name of, we'll say, John Jones, who refused to take his paper out of the office. He did not want it any longer. We wondered what was the matter. Upon investigation of our subscription book, we found John was short $5.70. He had stopped his paper as a matter of economy to us. A few evenings ago we stepped into a church and John's melodious voice rang out loud and strong in soul-stirring song, "Jesus Paid It All." We might have been mistaken, but his earnestness impressed us. The next day we sent him a receipt in full, begging his pardon for not knowing he had made an assignment of his liabilities to the Lord. —Lewis County (Mo.) Journal.

Chapter Committees for 1912

President J. G. Howard of San Francisco Chapter, A. I. A., has appointed the following committees for 1912:

Committee to audit the books and vouchers of the secretary and treasurer—Messrs. Applegarth and Barth.

Competition committee—Messrs. Howard, chairman, Schnaittacher, Faville, and two additional names to be given later.

Architectural League and Education Committee—Messrs. Mullgardt, chairman, Brown, Kelham, Hays and Headman.

Housing Committee—Messrs. Bakewell, chairman, and Meyer.

Building Laws Committee—Messrs. Dutton, chairman, Bliss, M. O'Brien, Kelham and Schulze.

Chapter Delegates to the National Convention

Architects William Curlett, Clinton Day and William Mooser were the accredited delegates from San Francisco Chapter to the 45th annual convention of the A. I. A. at Washington, December 12th to the 14th. In addition to these gentlemen, the president and secretary of the Chapter were, by act of the by-laws, entitled to attend the meeting and participate in the discussions.

Annual Meeting of Coast League

The annual meeting of the Pacific Coast Architectural League will be held in Los Angeles February 23rd, and an exhibition of architectural work will be held at that time. A. F. Rosenheim states that the $1000 prize offered to the members of the league for the best work in the Atelier classes will be awarded at that time.

Philip Gengembre Hubert

Philip Gengembre Hubert, who died in Los Angeles early in November, was one of the pioneer architects of America. He was born in France in 1830, came to the United States in 1849 and to Los Angeles in 1900. Besides being a successful architect, he was also a scholar and inventor.

He began the practice of architecture in New York when past 30 years of age and was the first to employ steel and fireproofing in the construction of buildings in the Metropolis. He was the architect of the first 12-story apartment house erected in New York. Among many important buildings which he designed are the Navarro in New York, which cost $8,000,000, and the Shoreham in Washington, D. C.

Among his inventions, some of which brought him large profits, were a self-fastening button and a hand elevator which was the forerunner of the present type of power elevators.

A resolution extending sympathy to the widow and family has been adopted by the Southern California Chapter, A. I. A. It was drafted by a special committee consisting of Frank D. Hudson and S. Tilden Norton.

Architect-to-be Knows How to Cook

A press dispatch from Los Angeles says:

Charles Wells, a pupil in the Glendale High School, is the best boy student in the graduating class in domestic science of that school. The class consists of thirty-six pupils, thirty-five girls and one boy—Wells.

Young Wells is a nephew of A. G. Wells, General Manager of the Santa Fe Railroad and of R. E. Wells, General Manager of the Salt Lake Railroad.

He says he likes baseball and all other boy sports, but "domestic science is the one handy thing for any man to know," he said. "There is no telling," he added, "now that suffrage has carried, when a man will have to do the cooking, and I'm taking no chances."

"Chuck," as he is known by his classmates, is just 18, and besides cookery, is studying to be an architect.

His father, R. H. Wells, is General Building Inspector of the Santa Fe.

Ten-Story Building

C. C. Chapman, of Los Angeles, who has for several years owned the southeast corner of Fifth and Los Angeles streets, has recently purchased three adjoining lots at $170,000, and is planning the erection of a ten-story building to cover the entire site. The property has a frontage of 213 feet on Los Angeles street and 125 feet on Fifth street. It is irregular in shape, containing 32,470 square feet. It is expected that construction work will be started early next year. The building will be of steel and brick, and will cost about $600,000. A. F. Rosenheim is preparing preliminary plans.

When Engineers Cannot Agree

EDITOR The Architect and Engineer:

It seems to me they are making a mountain out of a molehill over the dispute which came up recently between the San Francisco Building Inspection Bureau and the engineer who designed the steel frame of the St. Ignatius church. W. W. Breite was the engineer in question, and J. I. Devlin, the architect. Breite is one of the ablest structural steel designers in San Francisco, and this is the first time the quality of his work has been questioned. When the architect suggested to the Building Inspector the possible desirability of making one or two small changes in the design, to conform with the city ordinance, the inspector ordered construction work stopped, and a young and heretofore little heard-of engineer, named Bobbs, a former draftsman of the City Architect's office, was employed in an advisory capacity to examine the design and report his findings. It gave Bobbs something to do, but rather than trust to his own ability, the young man sought the services of Professor C. Durleth, of the University of California—a man whose theoretical ideas never have been questioned, but whose practical experience has been limited to comparatively few designs for actual building, the most notable of which was a Berkeley bank building which is said to have in its frame all the steel needed, to say the least. Bobbs and Durleth advised some radical changes in the design, which Breite insisted were entirely unnecessary, but to make his position more positive Breite called in Jno. B. Leonard, a very competent engineer of many years' experience. Leonard upheld the original design, and Breite then informed the architect that if he insisted upon making the changes recommended by Bobbs and Durleth he would throw up the job. The Building Inspector saw a splendid opportunity to keep Bobbs busy. A permit to continue according to the Breite design was peremptorily refused, and that, of course, let Breite out and Bobbs in. Now, I presume we will have a safe and practical design, from a political point of view at least, and when it has been finished the writer suggests that The Architect and Engineer publish the two in deadly parallel. Then your readers can judge for themselves the correctness of the designs and the competency of the men who made them.

POLITICS.

Architects and Socialism

The Los Angeles architects are delighted with the election result in their home town. They were strongly opposed to the Socialist movement, as evidenced by the following resolutions passed by the Chapter, a few days before the election:

"Whereas, the Southern California Chapter of the American Institute of Architects deplores the retarding influences which the element of so-called Socialism, injected into the present political campaign, is bringing to the building and to other business interests of Los Angeles, and

"Whereas, the members of the Southern California Chapter of the American Institute of Architects, assembled at their monthly meeting, unanimously join in calling to the attention of all contractors to all mechanics and to the public at large, the fact that, by reason of this agitation building loans are being refused, and the fact that new building activities as evidenced by existing conditions in the architectural offices of the city have already approached a standstill;

Now, therefore, be it resolved, that the Southern California Chapter of the American Institute of Architects endorses the work of the various organizations which have joined to defeat the so-called Socialism and to save the name and credit of the city.

Notice to Architects

Architects are invited to submit plans and specifications for the new poor farm buildings to be erected by the Board of Supervisors of Santa Barbara county, Santa Barbara, on the ranch purchased for the purpose at Goleta. The architects will be left to work largely on their own initiative, as the board has few suggestions to make, and has not determined upon any style of architecture or method of construction.

Berkeley Residences

Plans have been prepared by Architect John Hudson Thomas for a two-story frame residence to be erected on North Brae Terrace for Geo. A. Martell, 3021 Telegraph avenue. Exterior will be of cement plaster on metal lath with shingle roof. J. W. Dolliver has made plans for a two-story frame residence for Victor Poss, 2927 Russell street, Berkeley. Architect C. W. Ratcliff of Berkeley drew the plans for a ten-room residence for Mrs. E. F. Crawford, to be erected at Claremont, at an estimated cost of $5,000.

The Steady Subscriber.

How dear to our heart is the steady subscriber.
Who pays in advance at the birth of each year.
Who lays down the money and does it quite gladly,
And casts round the office a halo of cheer.
He never says, "Stop it; I cannot afford it,
I'm getting more magazines now than I read,"
But always says, "Send it; our people all like it—
In fact, we think it a help and a need."
How welcome his check when it reaches our sanctum,
How it makes our pulse throb; how it makes our hearts dance!
We outwardly thank him; we inwardly bless him—
The steady subscriber who pays in advance.—Ex.

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Architect and Engineer
OF CALIFORNIA
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A CAMPAIGN FOR HONEST MATERIALS

Unquestionably these are times when the consumer is looking for pure and unadulterated products. The movement for pure foods is developing into a general sentiment for honestly prepared materials such as waterproofing, paints and varnishes, roof coverings, etc. Time was when the architect was satisfied to accept a dealer's word for his goods but now the tendency is to call in a chemist and have the material analyzed before putting it in the specifications. This is a good sign and if the movement can be made general, it will mean quick death for some of the "horrible imitations" now flooding the market. It is the intention of this magazine to establish a department, the purpose of which will be to answer inquiries that may be submitted by architects or others, relative to the purity and worth of various kinds of materials offered for sale to the building trades. Samples will be submitted to competent chemists and reports of the analysis will be published in full, regardless of the facts.

It is common knowledge that a lot of cheap concoctions are being shipped into San Francisco and other Coast cities from the East, and sold in competition with local products at prices that the home manufactories cannot possibly meet with reliable goods. It is largely to stop this sort of thing that The Architect and Engineer will make public what the chemist finds. Just how useful this department can be made is apparent from a little incident that happened a few days ago. An architect had specified a certain kind of paint to be used on the steel frame of a Class A building. He didn't know a thing about the paint, further than he had seen it advertised as a desirable preservative for steel, with many recommendations, of course. Several hundred gallons of the product were ordered and part of it had been applied to the steel when somebody whispered to the architect that the stuff was rotten. A sample was submitted to a chemist who re-

ported that the paint was composed principally of dirty asphaltum. It is needless to say no more of that make was used. The same story could be told about a certain waterproofing compound that is being marketed in San Francisco today. Requests for tests will be answered in the order they are received, and as stated before, the reports will be published in full, with the name of the brand, the name of the manufacturer and the addresses of the distributors, in each and every case.

WHO IS TO PAY?

The worst year of fire waste since that of the San Francisco earthquake fire! That is the promise for 1911. How long will capital stay in the business of underwriting? Will it remain to carry the risk until the rapidly growing agencies of fire prevention make good their efforts in a curtailment of the frightful burnings?

The premiums paid for fire insurance do not suffice to replace what has been destroyed by fire. According to Insurance Engineering, the conflagration losses in San Francisco, Baltimore, Paterson, Toronto, and in hundreds of smaller places, during the past ten years, were not paid from the premiums collected in each of those cities or towns, but from funds contributed by the entire country. Without this help, San Francisco, for example, would have been compelled to raise several hundreds of millions of dollars for building purposes, with little security to give.

The fire waste is a tax on all. Shifting the burden of fire prevention and fire protection onto the community is selfish and unbusinesslike. No man can conduct a business without dealing with others. Conditions in American cities are such that personal neglect frequently spreads disaster to one's neighbors. A personal interest in fire prevention on the part of every man, woman and child will quickly bring relief from the fire waste to the entire country.

The Boston newspapers, following the issuance of the admirable report of the Chamber of Commerce, and the attack on the same by the speculators in shoddy building construction, quoted skeptically the Secretary of the National Fire Protection Association as saying that if Boston should have a fire like that of Baltimore or San Francisco, she need not expect to be rebuilt to the extent that those cities were rebuilt by insurance capital.

CONCRETE FAILURES AND WHY

Once more the world has been startled by the loss of life and the destruction of property due to the failure of a concrete structure. The latest disaster was the breaking of a great concrete dam at Austin, Pa. The facts in the case indicate that the structure was faulty in design and construction. The enemies of concrete are pointing to this disaster as an example of the foolhardiness of employing concrete in construction. The fact of the matter is that the Austin dam would have gone out if the material composing it had been stone, brick, steel or any other material. The foundations were undermined and therein lies the fault in construction.

Nobody claims that concrete is foolproof and so long as incompetent engineers and contractors are allowed to tamper with it we will continue to have failures. The practice of "skinning" the reinforcing material is a dangerous one and is becoming altogether too common—San Francisco not excepted.

Approves Auditorium Competition

The Architect and Engineer, 621 Monadnock Building, San Francisco, Cal.

Gentlemen—I am directed by the Oregon Chapter of the American Institute of Architects to transmit to you the following resolution adopted at their meeting, November 23, 1911:

"Be it resolved, That the Oregon State Chapter of the American Institute of Architects herewith expresses its approval of the conduct of the recent Portland Public Auditorium competition."

Yours truly,

FRANK LOGAN, Secretary.

Municipal and State Engineering

Good Roads—Water—Sewers—Bridges—Fire Protection

Use of Concrete Marks Great Development in Bridge Construction*

NEVER before in the history of bridge engineering has the influence of public opinion been so noticeable as at the present time and the interest shown by the public in this important branch of construction is very gratifying, especially to those engineers who have labored unceasingly to have bridges regarded from the artistic as well as from the utilitarian standpoint. Public opinion is now demanding not only that bridges shall be made better, but that they shall be more suited to and expressive of their purposes and environments. Although great advances have been made in the status of bridge engineering, there is still room for improvement, for it is often impossible to make communities realize that a bridge is something more than merely a means of crossing an opening. They are not willing to make the additional appropriations necessary to secure artistic bridges, even though the structures may occupy such conspicuous positions as to require more impressive and finer treatment than some public buildings upon which vast sums are expended to secure pleasing architectural effect.

A beautiful arch bridge is a wonderful structure. There is something inspiring about it. And engineers must do all in their power to have the public realize this and to appreciate the beauties that can be created by proper and simple combinations of common materials of construction. Symmetry, grace, simplicity and truthfulness are essential elements in a bridge possessing architectural merit. Truth is a basic element, and when one material is disguised to represent another, or when a part is made to appear as if performing a certain function when in reality it is performing quite a different one, the result is a dismal failure.

The most remarkable development in bridge construction during the past quarter of a century has been the progress made in the use of concrete, either alone or reinforced with steel. When it is considered that only 22 years ago the first reinforced concrete arch bridge was built in Golden Gate Park, at San Francisco, and that from this small span of only 35′ to the recently constructed arch span of 321′ in New Zealand is a tremendous step, it is evident that progress has been truly wonderful. Concrete, like stone, is best suited to resist compressive stresses, and it can be readily molded into any desired form or size and it is therefore not surprising that when concrete came into use as a bridge material it should have been used in the arch form. It was a comparatively easy change from the stone arch that had been the standard arch form for many centuries to the concrete monolithic or voussoir arch of similar outline. But it was soon realized that concrete in combination with steel has a distinct individuality of its own and hence important changes were made in the form of construction resulting in the use of lighter structures of more pleasing design and appearance. The constant tendency has been towards the elimination of redundant material. The use of arch ribs, with the variation in size and shape thereof to conform to different classes of loads, or the use of solid arch rings upon which rest column or cross walls to support the roadway above, approaches the design so commonly adopted for arches with steel ribs and in this respect represents a decided departure from, and improvement upon, the solid arch ring with its superimposed earth fill, which was until recently the standard form of masonry arch construction.

The most recent type in reinforced concrete highway bridge construction consists of a flat deck on which the roadway is placed, the deck in turn being supported by columns or cross-walls resting on a solid arch ring or upon ribs. These ribs are usually rectangular in cross-section, although those of circular form would give a more pleasing appearance but would be more costly and more difficult to build. Unless the ribs are very wide they should be braced to prevent lateral displacement under stress. Much can be said in favor or this open

*Excerpt from paper by Frank P. McKibben, professor of civil engineering at Lehigh University, presented at recent Congress of Technology.

spandrel construction except for very short spans or for spans of small rise where the old method of placing the roadway on earth filling retained between longitudinal side walls is better. In the absence of such limitations, however, the open spandrel construction results in a great saving of weight of superstructure, with consequent diminution in size of foundations and often also in a more pleasing design. For railroad bridges the column-and-rib type has not been adopted, but open spandrels with cross-walls on solid rings are of frequent occurrence.

Little progress can be reported in short span steel bridges; in fact, concrete beams or arches are so admirably adapted to short span construction that steel hardly holds its own in this field.

Oil-Concrete Roads

The following is taken from the address of the Secretary of Agriculture at the first American road congress of the American Association for Highway Improvement, Richmond, Va., November 20:

"An important feature of the investigative work conducted by the office of public roads is the discovery and development by Mr. L. W. Page, director of that office, of the preparation and uses of a combination of oil and cement concrete. Cement concrete has not only become a universal structural material, but its use in road building and all forms of engineering construction is increasing rapidly. The principal objection to the ordinary cement-concrete lies in the fact that it is extremely porous and absorbs water. In the course of experiments Mr. Page discovered that it was possible to mingle oils with wet cement. The mixing presents no difficulties whatever and the advantages of the new material are that it is much more dense than ordinary concrete and is entirely waterproof, while it develops an ultimate strength about equal to the ordinary concrete mixture."

To Beautify San Francisco Streets

(From the Springfield, (Mass.) Republican)

One notable result of the Panama-Pacific Exposition is to be a movement for beautifying the streets of San Francisco which it is believed will transform the city during the next four years. The work will be under the direction of the outdoor art league of the California club, which will begin by improving the street in front of its own club-house, and do what it can to persuade other property owners to adopt a consistent style of decoration. California is fortunate in a climate which makes possible a very sumptuous embellishment of flowers and foliage, but care is to be taken not to overdo in this respect, and ample space will be left for pedestrians. Prizes will be offered to encourage window boxes, which are regarded as specially important because there are so many apartment houses, 8 or 10 stories high. These will be covered from top to bottom with swinging vines and flowering shrubs. San Francisco missed one great opportunity in not reforming its street plan after the earthquake; it will have a chance now to see what it can do with the old plan.

State Architect Saves Public Money

Good things are coming out of New Jersey. It is said by the Newark News that since the creation of the office of state architect five years ago there has been a saving of $125,000. It is even more important that the change has resulted in the elimination of scandal in connection with the erection of buildings under state control. Some $3,000,000 have been expended in new buildings, additions to old ones and changes in structures during the five years, and all this work has been carried out without a single charge being made of crookedness, carelessness or extravagance. This is in contrast to the old days when there was much wasting of funds appropriated for state buildings. Meanwhile there have been scandals in connection with court-house buildings in Hudson county and in Bergen county, not to speak of wastefulness and graft in municipal buildings. The original estimate of the architect for the Hudson county court-house, for example, was $900,000, but the total cost of the building will reach over $3,000,000.

The Fire Waste for 35 Years

AN OBJECT LESSON.

Here is a record of the fire losses in the United States, year by year, for the past 35 years, according to the records of the National Board of Fire Underwriters:

Year.	Aggregate property loss.	Year.	Aggregate property loss.
1875	$78,102,285	1893	$167,544,370
1876	64,630,600	1894	140,006,484
1877	68,265,800	1895	142,110,223
1878	64,315,900	1896	118,737,420
1879	77,703,700	1897	116,354,575
1880	74,643,400	1898	130,593,905
1881	81,280,900	1899	153,597,830
1882	84,505,024	1900	160,929,805
1883	100,149,228	1901	165,817,810
1884	110,008,611	1902	161,078,040
1885	102,818,796	1903	148,302,155
1886	104,924,750	1904	299,198,050
1887	120,283,055	1905	165,221,650
1888	110,885,665	1906	518,611,800
1889	123,046,833	1907	215,084,709
1890	108,993,792	1908	217,885,850
1891	143,764,967	1909	188,705,150
1892	151,516,098	1910	214,003,300

State Roads in California

MUCH interest is being taken in the preliminary work of the new California Highway Commission and the public is looking forward to the commission's early report on its selection of a site for the State highway for which a bond issue of $18,000,000 has been authorized. Of this sum the first installment of $400,000 is now on the market. For the years 1911-12 and 1912-13 the appropriations are $133,000 each. The counties are required to pay interest at 4 per cent upon all money spent in the county until the bonds are retired as provided.

From 1907 to 1911 the state roads were in charge of the state engineer and recent appropriations have been about $150,000 a year for construction, repair and maintenance of roads in mountainous districts, mainly, the total being $403,300. The last report of the state engineer on roads describes eight of these roads with a total length of about 300 miles, some of which are not yet finished. The same report shows that the taxes levied for road purposes in the various counties to be spent in 1910 amounted to $3,340,333.66. Prior to 1907 he state roads were under a state department of highways with a state commissioner in charge.

Some counties have bonded themselves heavily for local construction of roads, notably San Diego, $1,250,000; Los Angeles, $3,500,000; San Joaquin, $1,890,000; Sacramento, $660,000.

Los Angeles county's plan includes 307 miles of road, of which there had been opened at the end of 1910 76.33 miles of oiled macadam and 14.25 of finished grading, bridges and tunnel, with 170.32 miles under contract or advertised for the letting of contracts. The liberal policy of the State and the opportunity for the application of equally liberal policies in the counties of the State are beginning to show their results; and California bids fair to be one of the most active States in road building, both state and local, for a number of years.

The use of oil upon highways has been developed to a large extent in California, and at least one-tenth of the 50,000 mileage of roads in the State is now oiled, or more thoroughly treated with oil during construction. The average cost of oiling is about 3½ cents a square yard, though some roads have cost double that amount.

There are 48,069 miles of road in the State of which 8,588 have been improved.

New Architects

The State Board of Architecture for Southern California has issued certificates to practice architecture to Howard E. Jones, 214 Broadway Central building, Los Angeles; Vere O. Wallingford, 255 Base Line road, San Bernardino; Lewis J. Gill, 752 Fifth street, San Diego, and Charles Cressey, 311 Savoy building, San Diego.

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Improvements in the National Parks in California

THE Department of the Interior proposes to spend $381,620 in the national parks in California during the fiscal year ending June 30, 1913, if the amount requested by the Secretary of the Interior is appropriated by Congress. This is an increase of $314,070 over the appropriation for the current fiscal year. The increases requested are as follows: Yosemite National Park, from $50,000 to $274,000; Sequoia National Park, from $15,550 to $89,550; General Grant National Park, from $2000 to $17,250. The items for each park are as follows:

Yosemite National Park: New road along south rim of Yosemite Valley from Fort Monroe to Glacier Point, $75,000; improving the road on the north side of Merced River from Pohono bridge to the junction with the Coulterville Road, $50,210; continuing the improvement of the road on the south side of Merced River from Camp Ahwanee to Happy Isles, $46,750; a reinforced concrete bridge to replace the Sentinel bridge over Merced River, $14,000; construction of trail from Merced Lake up the Merced River Canyon to the head of the Merced River, $5,000; construction of trail from the head of Lyell Fork Meadows to the Lyell Glacier, $1,500; continuing the installation of the water distributing system in the Yosemite Valley, $25,000; garbage incineratory, $6,900; operating the present road-sprinkling system, $7,500; the extension of the road-sprinkling system to Fort Monroe and Happy Isles and operation of the same, $7,500; repair of existing roads, trails, bridges, culverts, buildings, plants, fences, camp sanitation, and removal of undergrowth, $25,000; salaries, $10,460.

Sequoia National Park: Widening 21 miles of Giant Forest wagon road to 18 feet and constructing drain culvert, $25,200; constructing 40 miles of trail, $12,000; improving 150 miles of trail, $15,000; construction of 20 miles of telephone line, $8,000; fencing 50 miles of the park boundary, $10,000; completion of water system for Tourist Camp at Camp Sierra, including public drinking fountains, $2,500; constructing a stairway and hand rail on Moro Rock, $2500; construction of pier, bathhouse, and boathouse at Twin Lakes, $2000; improvement and development of Paradise and Clough caves, $2000; piping water from Log Creek to Military Camp, $2000; repainting Marble Fork bridge, $250; fencing rangers' pasture and constructing and painting rangers' cabins, $2400; salaries of rangers, $5700.

General Grant National Park: Construction of two miles of wagon road, $5000; construction of 2 miles of trail, $400; completing water-supply system at Tourist Camp, $500; fencing Tourist Camp ground, $800; rebuilding 8 miles of park boundary fence, $1600; construction and improvement of park buildings, $1050; forestation and protection of growing forest, $5000; construction of three gateways at entrances to park, $750; construction of public bathhouse, $750; salary of park ranger, $1400.

For the development and care of the national parks the Secretary of the Interior has asked Congress to appropriate the sum of $791,080.60, an increase of $617,830.61 over the appropriations for the current fiscal year. The national parks constitute ideal recreation grounds for thousands of people, but their development and use are seriously retarded by the lack of adequate roads and trails, and until sufficient money is appropriated for beginning a comprehensive plan of development the parks will fall far short of rendering the important public use for which they are intended.

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Some Essentials of Hospital Heating and Ventilation

IN the case of hospital heating and ventilation where the wards are heated entirely by indirect heat the quantity of air supplied should, in any case, be so great that the temperature thereof need not exceed 120° F. at any time.

A general rule for air supply and exhaust is to supply air to all rooms into which patients may enter, and also to the corridors, and to exhaust the vitiated air from all such rooms, and from any other rooms which, because of their special use, would make ventilation desirable.

Humidification has been referred to as one of the essentials of good ventilation. Relative humidity and temperature are most intimately associated. It is true that a temperature of 60° or 65° F. with a relative humidity of 50% or 60% is more comfortable and healthful than a temperature of 70% or 75% with a relative humidity of 20%, the latter condition being frequently observed in our homes, schools and hospitals during the winter.

It is not true, however, that the temperature may be lowered and the humidity raised with a resulting saving in fuel, for it takes vastly more fuel to evaporate into the air the amount of water required to raise the humidity than is saved in the 5%, or even 10%, less to which the air is heated. In determining the capacity of the boiler and in considering the fuel consumption, allowance must be made for humidification.

The subject of direct versus indirect heat for hospitals is much discussed. The direct radiators have the advantage of making possible the quicker and less expensive warming up of the rooms upon the closing of the windows and of giving the patients a place to warm feet or hands at such times, the absence of which in rooms without direct radiators is often criticised by doctors.

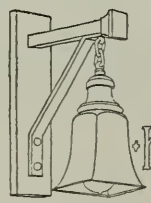
The amount of direct radiation used in rooms occupied by patients may well be limited to an amount sufficient to counterbalance the heat losses through wall and glass areas. It should not be used in operating and similar rooms.

Some consideration is being given by the medical fraternity to the subject of artificial cooling of hospital wards. In view of the results of recent investigations as to the effect of excessive temperature and humidity it is reasonable to expect that much good may be accomplished in severe cases by lessening the temperature and humidity within the wards in hot weather. There is little available data, however, as to the clinical value of such an arrangement. A combination of a mechanical refrigerating system with an indirect heating and ventilating system for cooling purposes is quite possible.

Recapitulating the essential features of a hospital ventilating system may be said to be:

Ample natural or window ventilation.

Supplementary thereto an ample supply of fresh air at a low temperature to all rooms used by patients.



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The operating rooms may well be separately treated.

Air intake should be located as high as possible.

All air supplied to the hospital should be freed from dust by means of filters, preferably of the washer type.

Air chambers and ducts should be finished smooth, and so far as possible be subjected to light.

Humidification is desirable, and even essential.

Temperature regulation is desirable and a source of economy.

Direct radiation, of a limited amount, is regarded as desirable.—D. D. Kimball, in The American Architect.

Heating and Ventilating Concrete Buildings

SCARCELY anything could be imagined that would be more likely to bring about the desired intimate association of the architect with the heating and ventilating engineer than an increased adoption of ferro-concrete in the construction of large buildings.

It has been pointed out that reinforced concrete building restricts the "air leakage" which is usual when other materials are employed. On the other hand, heat transmission through ferro-concrete walls is more rapid than through brick walls, partly owing to the better heat conductivity of the material, but more to the decreased thickness of the walls.

Let it be taken for granted, as we may reasonably do, that a public demand for ferro-concrete construction will certainly, if slowly, extend; then it will be seen that numerous advantages fall to the engineer—relatively small in themselves, perhaps, but possessing a cumulative value that will have an important bearing on the two essentials already stated, of the unrestricted acceptance, and full efficiency in subsequent working, of the engineering installation.

In the first place, very careful and complete architectural consideration must be paid to the heating and ventilating scheme along with the preparation of the plans. Flues and ducts cannot be concealed in thin ferro-concrete walls. Floors and walls must be planned for their admission beforehand, to avoid any considerable cutting through the hard concrete, with its vitally important arrangement of the reinforcement. In view of the fact that there will be no "roof space" in large concrete buildings, as is required by some heating and ventilating schemes, definite architectural provision must be made for running the pipes. There will also occur at times a practical difficulty in conveying the vertical pipes and flues, when, as in steel-frame buildings, division walls are not continued up and down from floor to floor. At almost every turn it will be found that need will arise for close collaboration between the architect and the engineer—a necessity which must tend materially to the soundness and completeness of the engineering scheme, making it, in fact, a recognized integral part of the entire architectural conception.

Then there will also be advantages in the direction of reducing the cost of the installation. Economy will be further increased by forming the ducts entirely of reinforced concrete—that is to say,

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doing away with all brick work, making the ducts practically air-tight, and so minimizing the heat losses in transit—a reduction which will be furthered by the formation of proper curves and angles which have not been easily possible in brickwork. Concrete ducts will also be cheaper to construct, and this fact should induce architects to view them with greater leniency than formerly.

A further advantage to the engineer will be found in the method of laying the floors as the work proceeds, instead of waiting for the building frame to be first completed. These are typical instances of the changes involved in the adoption of reinforced concrete in main buildings. In many minor respects, further advantages, all tending both to economy and efficiency, will be found in the adoption of the new medium for the construction of such matters as chimney stacks, water storage tanks, "sumps," foundations for machinery, air inlet and outlet shafts, etc.

As ferro-concrete tends to more rapid construction than brickwork, and much more rapid than stonework, the consequent saving in first cost is allied to the many other advantages already recognized. The disadvantages, chiefly of an aesthetic nature, architects will be called upon to overcome. Its widespread adoption is but a question of time. Engineers have already to reckon with it very seriously. Heating operations will be facilitated by it; but the many complex questions that already arise on every "job" will, in all probability, be further complicated by a new and at present unknown factor.

An impervious material, such as this has not yet been fully dealt with scientifically in its relation to health-giving air enclosed by it. At this point the ventilating engineer is called upon with no little urgency. That he will rise to the opportunity none will doubt who has followed him from stage to stage in the last twenty years' expansion of his business—F. G. Stevens.

Opening of Panama Canal

Col. George W. Goethals, U. S. Army, states that the Panama Canal will be opened for the passage of vessels by January, 1914, and possibly six months earlier if no unexpected delays are experienced. Colonel Goethals has recently submitted his annual report, and among other things suggests that the government keep all lands for governmental purposes to provide for military, naval and other improvements. He further says:

"The revenues of the canal should go to pay not only the operating expenses, but to repay the capital invested. Every legitimate means for increasing the revenue should, therefore, be adopted.

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The government should have coal and fuel oil on hand for its own vessels, and these commodities should be sold to shipping using the canal. These should be supplied at an established rate and purchased after advertisement. The existing commissary, manufacturing plant and laundry should be continued for the benefit of the government forces and furnish supplies and services to shipping. A wireless telegraph station should be established for commercial, as well as military purposes. The canal authorities should be authorized to sell tools and appliances needed by ships and to make repairs as they may be necessary while ships are in the vicinity of the canal. A drydock should be built with dimensions conforming to the locks. Both the drydock and machine shops would be available for use by the navy. If this policy is to be adopted early legislation is needed in order that the construction necessary to make it effective may be undertaken without delay."

Floor Heating

The Romans used to heat their villas by a system of double floors and walls. Studies of ancient ruins show that upon a base floor small piers or columns, approximately 6 x 6 inches, and 20 or more

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inches high, were erected about 24 inches on center in both directions. Flat tiles to form a panel, supported at each corner by a pier, were laid for the floor proper with perhaps another smoother wearing surface. The walls were, at times, laid up with hollow tile "furring" blocks. At one side of such a room, the fire chamber would be erected. In this small room an open fire was built and the warm air circulated below and around the room made for the time an ideal heat.

In this issue is described a method of heating a clubhouse which would be applicable to residence construction. Steam pipes are laid in chases left in the upper surface of the floor around the edge of the room. After the pipe is laid the opening was filled with a weak concrete and covered with a decorated tile.

Heat rises and the efficiency of heating the room by radiation from the floor is evident. Cold concrete floors have been held up as a bug-a-boo, and the method suggested eliminates this drawback, which, by the way applies, under most conditions to all construction, for floors are generally cold. The position of the radiator is always a trouble to architect and housewife, and its elimination would be welcomed.

Preliminary Plans Approved

The preliminary plans for a two-story reinforced concrete building for the Sisters Academy at Livermore have been approved, and working drawings will be completed at once. Building is expected to cost about $25,000. The plans are by Architects Welsh & Carey, Metropolis Bank building, San Francisco.

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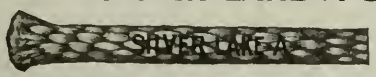

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By the Way

Some Industrial Information Worth the While

Getting Speed out of an Elevator

In this age of time-saving devices, the high speed elevator has come as a matter of course. But there is one thing about high speed elevators that is not considered carefully enough by the average architect—i. e., the elevator door hanger. The speed of an elevator does not depend so much upon the elevator itself as upon the quickness with which the different working parts of the elevator can be operated. It doesn't do any good to spend a lot of money on a high speed elevator if the elevator doors are hung on clumsy, slow-acting hangers that not only move slowly but bind and catch, retarding the operator and as a result the speed of the elevator. What is needed is a quick-acting, easily operated, smooth-running elevator door—a door that can be opened and closed in a fraction of a second—a door that in its action keeps up with the speed of an elevator car and at the same time is practically noiseless and does not disturb the tenants in nearby offices.

Another point to be considered by the architect is the necessity of making the work of closing and opening elevator doors as easy as possible for the operator. Many office buildings have found it impossible to keep elevator operators for more than a week at a time, simply owing to the difficulty of operating the elevator doors. There is such a demand for experienced operators that they will not work long in an elevator car where great strength and patience is required to move the doors. Any owner who has been up against this proposition will certainly thank the architect who will hang his elevator doors in such a way that it will be a pleasure to an elevator boy to operate them.

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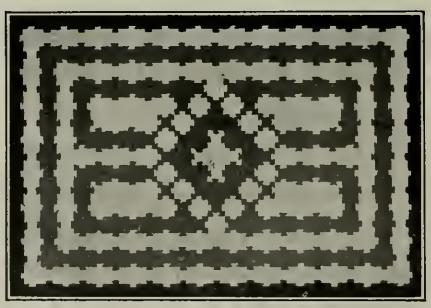

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Ceresit's New Catalog

The Ceresit Waterproofing Company has just published a new catalog describing the Ceresit method of water and damp-proofing and showing a number of photographs of buildings which have been treated with Ceresit Compound. A list of some of the many structures waterproofed is also given as well as a list of the companies agents throughout the United States.

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Rooms vs. Apartments

Chief Inspector of Los Angeles Buildings J. J. Backus says that if the Burnett tenement house act, passed by the last Legislature, is enforced to the letter, 40 per cent of the rooming, apartment and boarding houses in the Southern city will have to go out of business or make costly improvements.

Section 70 of the act reads: "No horse, cow, calf, swine, goat or sheep, chickens or poultry shall be kept in a tenement house, or within twenty feet thereof on the same lot, and no tenement house or the lot or premises thereof, shall be used for a lodging house or stable, or for the storage or handling of rags."

The words, "no tenement house or lot or premises thereof, shall be used for a lodging house," seems to be the objectionable feature and is construed by the building and health departments to mean that no single or one-room apartments can be maintained or provided for in apartment buildings.

A committee consisting of the Board of Public Works, Health Commissioner, City Attorney, City Prosecutor and Building Inspector will take up the matter and will possibly work out a plan for the bringing of a friendly suit.

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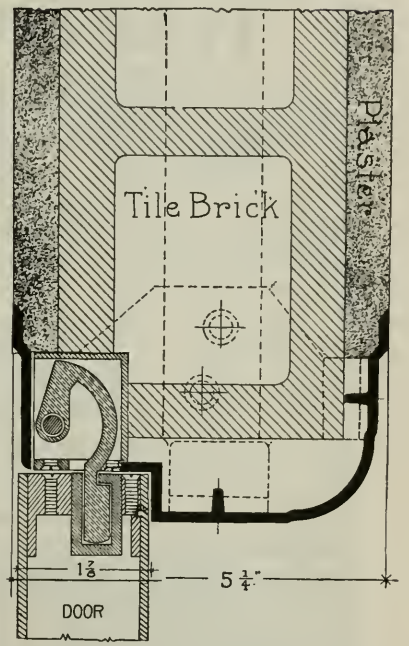
Wrought Iron Door Frame and Invisible Hinges.

The modern fireproof and sanitary building of today requires door frames which will not warp nor show cracks in joints, as generally is the case with ordinary iron or wooden frames, caused in most instances by the heat or settling of the building. Another bad feature of the old style frame is that they collect dirt and germs, which is the cause of sickness in a large number of instances.

With these points in view the accompanying illustration showing a one-piece welded wrought iron door frame will be found interesting. This frame is constructed scientifically of specially rolled wrought iron in different shapes as shown on the following pages. These frames are, without doubt, better than any other frame on the market today, being absolutely fireproof in construction and, therefore, the most durable for modern use. In Europe they are installed in the following buildings:

In over 100 up-to-date hospitals and sanitariums. In over 50 bathing establishments and lavatories. In over 80 colleges and schools. In over 40 commercial and industrial buildings. In over 40 army and navy buildings. In over 60 administration and public buildings. In over 25 other different buildings.

This partial list shows that in about 400 buildings there were over 100,000 frames installed, which shows the progress made in this respect in the short time they have been on the European market. The first-class up-to-date architect demands the best one-piece welded iron door frame.



These rolled wrought iron door frames received the grand prize at the world's fair held in Brussels in 1910 and have received the highest indorsement that architects can give, since large numbers of them in Germany and other European countries, many of them in government employ, have specified them. These frames were especially designed and perfected for modern fireproof and sanitary construction and are peculiarly adapted for hospitals, sanitariums, army and navy, administration, public, commercial and industrial buildings, colleges and schools, bathing establishments, lavatories, warehouses, etc.

Architects will also be interested in the extensive line of high-grade architectural iron and steel goods, covering a very wide range, furnished by J. G. Braun. These include steel mouldings for store fronts, elevator enclosures, plain and ornamental sash bars, square tubing for elevators, elevator enclosures, office railings, etc.

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Big Heating Specialists Establish Permanent Western Division

The C. A. Dunham Company, which has established permanent offices in San Francisco and other Coast cities, is the patentee and sole owner of the Dunham steam traps, used in connection with the Dunham systems of Vacuo-Vapor and Vacuum steam heating, which have proven not only a revelation in operation, but a source of extreme satisfaction to architects, engineers, heating contractors and owners.

The company has a most comprehensive sales and engineering organization, maintaining its factory and general offices for the United States at Marshalltown, Iowa, and at Toronto, Ont., for the Canadian business.

In all the principal cities of the country are located branch sales offices in charge of competent heating engineers, while general division offices are maintained at New York, Chicago and San Francisco.

The western division comprises all United States territory west of the Rocky Mountains, with branch sales offices in the following cities: San Francisco, Los Angeles, Portland, Spokane, and Salt Lake City, thus giving prospective customers easy proximity to prices and engineering advice, on all their specialties and their installation, nothing being more annoying to a customer than to be obliged, at a critical moment, to try to get information from an office 500 to 3000 miles distant.

All this is done away with by having branch offices in important cities, managed by efficient and capable engineers, who are on the alert at all times to give prices and advice regarding their specialties, the way they should be connected, capacities, etc., to any one applying for such information.

The Dunham Vacuo-Vapor system is a low pressure, two pipe vacuum system of steam heating, operating automatically without the use of a vacuum pump, and is suitable for any size building, from the smallest residence, to the largest office building.

The Dunham radiator trap—the heart of the Dunham systems—is placed on the return end of each radiator and steam condensing unit, to allow for the free passage of air and water from the radiator into the return pipe without the loss of steam.

Strange as it may seem, the attempted development of this little trap has consumed almost the entire mind of those contributing to the advancement of the science of steam heating. Hundreds of various devices have been made and patented, and almost equally as many have

[Continued on page 123.]

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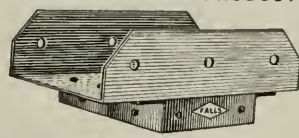

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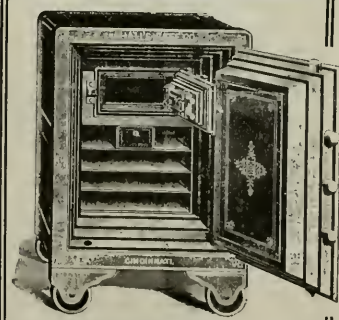

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Announcement

THE **C. A. DUNHAM CO.,** of Marshalltown, Iowa, beg to announce the opening of their Western Division Offices, Nov. 15, 1911, in the Monadnock Building, San Francisco, where complete information and engineering advice may be obtained, with reference to the application of the **Dunham Radiator Trap,** to the **Dunham** systems of **Vacuo-Vapor** and **Vacuum** steam heating.

We cordially invite Architects, Engineers, Heating Contractors, and others interested, to solicit information and catalogues.

Yours very truly,

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Nov. 15, 1911

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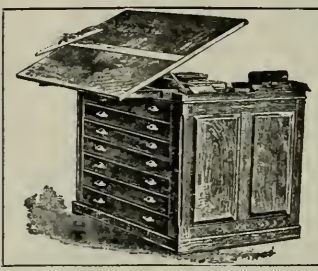

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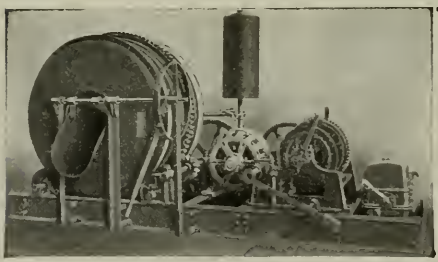

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[Continued from page 119]

been consigned to the junk pile as impracticable.

All during this period of development the inventor's mind seemed to stick to the idea that the motive force of the trap should be produced by flotation, viz: to open when water surrounded it, and close when surrounded by steam.

The difficulties of such a theory presented themselves in succession:

First: to produce enough motive force would require too large a trap.

Second: the float trap necessarily called for sliding contacts or joints of one kind or another to clog and become inoperative.

Third: the trap would not allow for the passage of air without the constant leakage of steam.

Fourth: the parts of the trap were necessarily very delicate, thus making them susceptible to easy destruction.

With these grave problems staring them in the face, braver ones continued in their attempt to perfect the float trap. Lenient and subservient people put up with them and were reluctant in their expressions of satisfaction.

This continued until the year 1904, when the Dunham, a trap different in shape, construction and operation came on the market, and with the Dunham came the startling claims that: first, it would close off absolutely tight for steam; second, it would open wide for passage of air and water. Third, it produced a motive force within itself of from 10 to 25 pounds per square inch. Fourth, it contained no sliding contacts. Fifth, its valve opening was full ¾-inch. Sixth, it would not clog up by reason of grease and core sand getting into it.

Requests for information regarding it began pouring in upon the manufacturers, trial orders were given, tests made and plants installed to the end that it was discovered and proven that the claims were correct.

This was the beginning of the advent into modern heating practice of the Dunham Thermostatic Radiator Trap.

As regards the growth of the prosperity of this trap, the photographs contained in the company's catalogue showing some of the largest buildings constructed in recent years, using these traps, bespeaks more than do words, the favor they have gained in all parts of the country.

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They guarantee where their plans and specifications are followed, that the system will noiselessly circulate steam through every part of every radiator, and that no jet of water will be required at vacuum pump or in any part of return lines, and that if any of their specialties, connected to service for which they are intended, and under such service prove defective during the first year, such will be replaced free of charge.

The San Francisco offices of the company are located in the Monadnock building, under the supervision of H. M. Reynolds, who will take pleasure in sending catalogues and other information to those interested.

Manufacture Freight Elevators

The Wells and Spencer Company of San Francisco, which has been doing a splendid business in elevator repair work and dumb waiter building since the fire, is branching out and now maintains a construction shop that is a credit to the city and the company must be reckoned with in the future, when elevator jobs are being figured. Besides manufacturing freight elevators of almost every size and description, Wells and Spencer are handling one of the most satisfactory service lifts or dumb waiters on the market. It is inexpensive and easily operated and has been installed in a great many of the new apartment houses in San Francisco and the Bay cities. The freight elevators made by this firm are operated by electric, hydraulic, steam and hand power. Some of the more recent installations include the Thompson-Diggs warehouse in Sacramento, Siller Bros. building, Sacramento, the Rural Health Retreat at St. Helena and a hydraulic pumping plant for a passenger car at Willows, Cal.

Medusa Shipped to Far Africa

It will undoubtedly interest Architect and Engineer readers to know of the extensive use of Medusa White Portland cement. While this product has been on the market for only a few years, yet foreign shipments are already being made, and the manufacturers have just completed an order for five cars to Sydney, Australia, and two cars to Delagoa Bay, South Africa. Several thousand barrels will also be used on the Woolworth building, New York, the highest office building in the world.

Largest Brick Production

According to the United States Geological Survey 9,791,870,000 common brick were manufactured in the United States in 1909, also 1,023,654 vitrified paving brick and 816,164,000 front brick, a total of 11,631,688,000.

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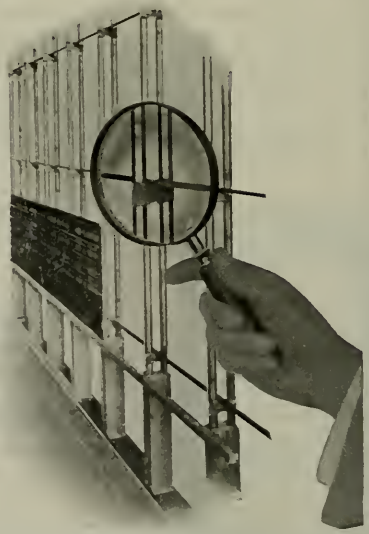

New Ransome Models

The Ransome Concrete Machinery Company, represented on the Pacific Coast by Norman B. Livermore Company, is continuously making improvements in their concrete machinery, and one of their most recent products is a gasoline engine portable outfit. The drive is by chain and then through cast steel gears to the mixer. The bronze bushed journals permit the removal of the shaft without disturbing the drum. The friction clutch, by which the mixer may be instantly thrown out of connection with the engine that continues to run, is of new design, and the accessibility of all parts and positiveness of operation will be appreciated.

There are no excess parts. The rigid squaring plate keeps everything in alignment, and the holes drilled by templates make it possible for overhead rigging to be used where the job demands it. The steady flow of discharge from the drum is illustrated and it is all accomplished by simply a quarter turn of the hand lever. A batch is out of the mixer in 15 seconds. The headquarters of the Ransome Company are at Dunnellen, New Jersey.

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Ferroinclave is a sheet steel with dovetail corrugations and is patented. The corrugations are inversely tapered, thus permitting the large ends of the corrugations of one sheet to fit or "shingle" over and into the small ends of the corrugations of another sheet, forming a tight joint without destroying the dovetail of the corrugations and making practically one continuous sheet.

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Ferroinclave is the product of the Brown Hoisting Machinery Company of Cleveland, Ohio. Complete description, price list, etc., will be mailed on application.

Big Buildings Projected

Henry E. Huntington, president and owner of the Los Angeles railway, will erect immediately a ten-story building, 50 x 150 feet, of steel construction, on the block bounded by 11th, 12th, Main and Hill streets, Los Angeles. The building will contain a general depot and offices for the Los Angeles railway and quarters for the Jonathan Club, now in the Pacific Electric building. Mr. Huntington is expected to erect other buildings on the property, making the total construction outlay nearly $2,000,000.

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All this and more may be done without knowledge of mathematics by the simplest mechanical process; no hand book nor slide rule nor table of logarithms are necessary in any of the problems covered.

A pocket in the front cover contains a piece of clear celluloid on which is scribed a straight line. This is called the index and will be found convenient in the solution of the problems. Instead of this line, however, a string or straight edge can be used.

The diagrams are all solved in a similar manner as follows: From a known point on any scale a line is carried to a known point on another scale and where it cuts the remaining scales, which are to be read simultaneously as shown by arrow points, solutions are found. The book sells for $3.00. Teclinical Publishing Company, 604 Mission street, San Francisco.

The Lansing Wheelbarrow Company's Latest Acquisition

The Lansing Wheelbarrow Company, of Lansing, Mich., has purchased the assets of the Advance Concrete Mixer Company of Jackson, Mich., which recently went into bankruptcy, and is manufacturing the concrete mixers, mortar mixers, etc., formerly made by the Jackson Company. The Lansing Wheelbarrow Company, manufacturers of trucks, wheelbarrows, scrapers, etc., has been in business for thirty years and is rated in the millions. It is therefore in position to carry on the business of this new department on a large scale and to take care of business promptly.

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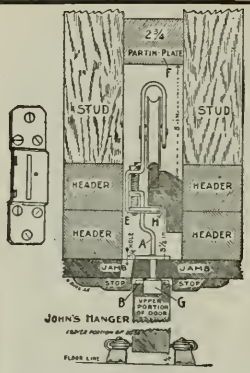

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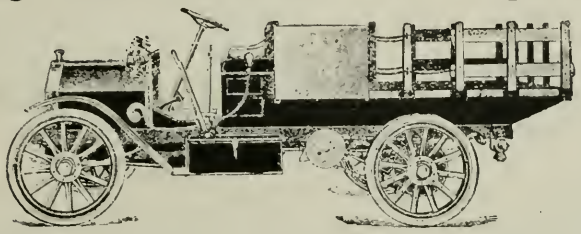

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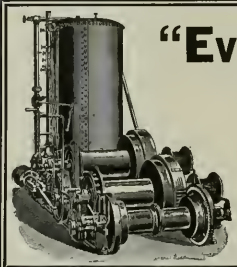

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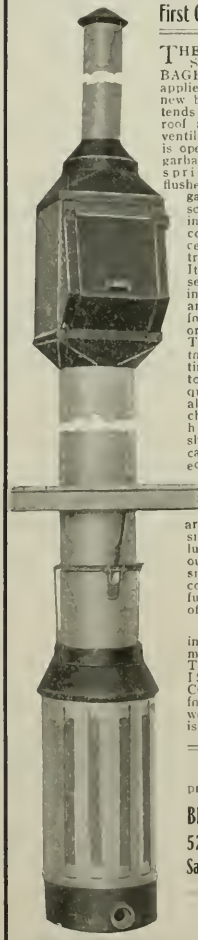

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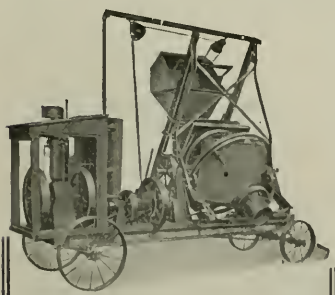

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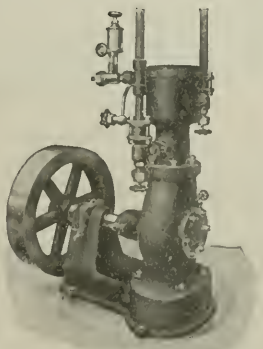

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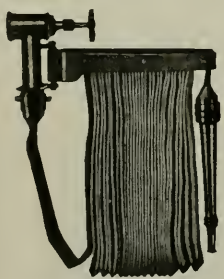

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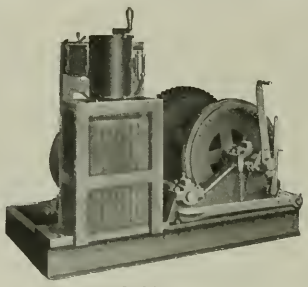

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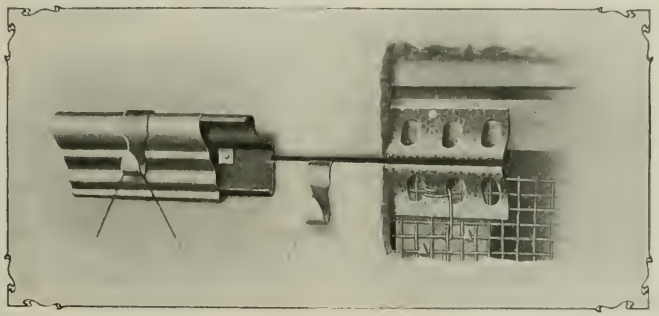

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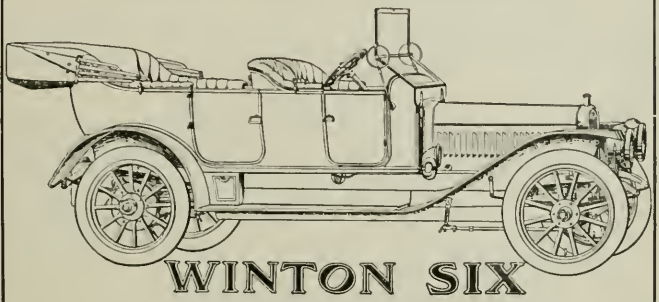

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¶ For the price has not been increased. It remains at $3000. And if you want to know how wonderful it is in value, just compare it with cars that are offered at $5000 to $6000.

Call or phone for demonstration.

THE WINTON MOTOR CAR. CO.

300 Van Ness Ave., San Francisco

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How "RICHMOND" Vacuum Cleaning Saves Money

Forget the fact that "RICHMOND" vacuum cleaning eliminates drudgery, increases comfort, promotes health—forget the *convenience* of it, for a moment, and judge it purely as an *economy*—by the actual daily dollars and cents it *saves*.

First, it halves the *labor*, and consequently the *cost* of cleaning.

The very act of cleaning a room with a broom and duster involves **eight separate** operations: 1. The sweeping itself, which is a slow, laborious task; 2. Moving furniture about; 3. Taking out the rugs and beating them; 4. Gathering the dust together into a dust pan after it has been swept up; 5. Opening the windows during the sweeping process—this means draught all over the house, and in winter, loss of heat which costs money to produce; 6. Dusting over the furniture with a soft cloth or duster; 7. Climbing st p-ladders for high dusting; 8. Shutting the windows and bringing the room back to its normal temperature. With "RICHMOND" Vacuum Cleaning, there is but one operation—sweeping. No opening of windows; no wielding brooms; no rug beating; no dust-collecting; no dusting. And "RICHMOND" Cleaning being so thorough, it is not necessary to do the work so often as with a broom.

Second, it puts an end to the annual tear-up called *housecleaning*—and to all of the expense, wear and tear, breakage and depreciation which housecleaning involves.

Housecleaning is a **semi-annual tax** which those without vacuum cleaning must **always pay.** First there is the cost of outside labor brought in; and considerable though this be, it is small when compared to the **damage** loss which housecleaning always means. The carpet which is taken up never looks so well when it is relaid. The furniture which is scuffed and scarred and scratched in moving is permanently lessened in value as well as in beauty. The pictures and mirrors that are broken, as some always are, mean a cash outlay. There is no article of household furniture—nothing in the house from the wall paper to the trim and fixtures that does not suffer a positive money loss at the time of spring and fall housecleaning.

Third, it eliminates the *chief cause* of *all* wear and tear depreciation—*dust, grit and grime;* and doubles or trebles the life of all carpets, rugs, wall-coverings, hangings, upholstery, keeping everything always *bright* and *new*.

The reason why broom-swept carpets and rugs grow worn out and threadbare is that the sand and grit which is tracked over them finds lodgement deep down at the base of the nap. This grit, when examined under the microscope, shows knife-like cutting edges. Walking over the carpet forces the fine nap against these knife-edges and shears it off leaving the bare warp in view. No amount of broom-sweeping can possibly dislodge this cutting grit. Only by the right kind of vacuum cleaning can carpets and rugs be kept free from it. So, not only with floor coverings, but with everything in the house, it will be seen, that dust, grit and grime, more than the wear and tear of use, are the prime causes of depreciation.

Not only in residences, but in apartment buildings, hotels, schools, office buildings, libraries, churches, theatres, factories, stores, garages and public buildings, we are prepared to prove the *actual economy* of "RICHMOND" Vacuum Cleaning.

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Almost solid asphaltum, used in constructing macadam and all other roads where asphaltic material is needed.

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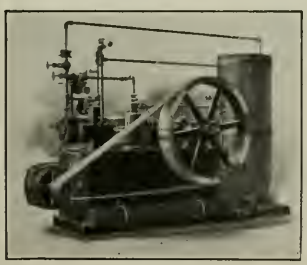

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Information and Estimates Cheerfully Furnished Upon Application.

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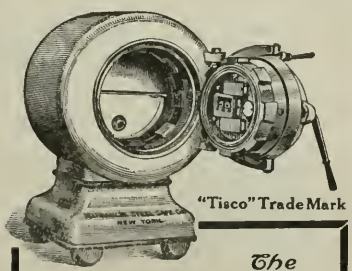

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Bill & Jacobsen, the well known agents and manufacturers of The Bradshaw Sanitary Garbage Chute, have perfected a newer and simpler arrangement for the disposal of garbage, in the shape of a new model garbage chute. The new chute has all of the sanitary features of the old, besides being simpler in construction, and is sold at one-half the former price.

Their chute has been approved of by Dr. Rupert Blue, Federal Health Officer of the United States, and by the Boards of Health of San Francisco, Cal., and Seattle, Wash., and by leading architects and sanitary engineers of the United States.

Illustrations and full description of the new model will appear in the next issue of The Architect and Engineer.

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for your particular use made in 14 colors. We manufacture in California where climatic conditions go to make up and compound a higher grade Drawing Ink.

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We make a new color called WATER-BLUE which is the right color for water lines. We call your attention to this new blue.

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A Strictly Chemical Solution

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for Brick, Concrete and Exterior Plastered Buildings

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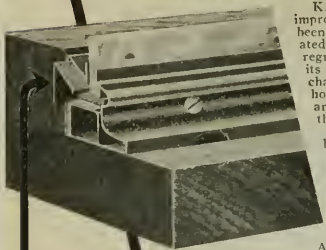
YOUR STORE FRONT WORK

WHETHER ON NEW OR REMODELING JOBS

can be taken care of by KAWNEER in a sensible manner and when finished, you will feel sure that you have installed for your client a Store Front that will do all that can be expected of a modern construction.

Kawneer STORE FRONTS — **The First Solid, All-Metal Store Front**



KAWNEER ideas were original and every improvement made during its development has been based on actual tests—each idea originated with us. Take, for instance, KAWNEER regulated ventilation and drainage. We saw its need and developed this point. Now merchants are able to open and close the vent holes of the sash—clear windows in Winter and dust-tight sash in Summer. That is a big thing to the merchant.

There is a reason for specifying the various building materials and that is why we want you to know more about KAWNEER. It is permanent, most simple to install, (if it weren't we would be flooded with "kicks"), clean-cut, (a business puller), architecturally correct and the cost of up-keep is nothing. Put in KAWNEER and your client is all through with his Store Front costs.

ARCHITECTS' BOOKLET NO. 4.

It plainly describes KAWNEER by means of full size details and photographs, tells how it is installed, also contains good information about modern Store Fronts in general. Just send for Booklet No. 4. No obligation—we want you to learn more about KAWNEER.

CONTROL SLIDE OPERATED FROM INSIDE

KAWNEER MANUFACTURING CO.,

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LOOK at this steam and water drum. Notice the anti-priming valve between the two compartments. When a drop in pressure occurs this anti-priming valve closes, and the difference in pressure between the two chambers keeps it closed while the drop continues. This effectively prevents priming and accelerates the flow in the tubes, rather than retards it, as is the case when inclined water tube boilers are called suddenly upon for steam. This water chamber is never subjected to high temperature, and owing to the entire absence of ebullition, forms an exceptionally large settling chamber or mud drum.

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Vol. XXVII No. 3

JANUARY, 1912

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TIFFANY PATTERN. A perfect and handsome Roof Covering. The only tile that gives the effect of Lights and Shadows. 'Tis absolutely water-tight. Used on all the schools in San Jose.

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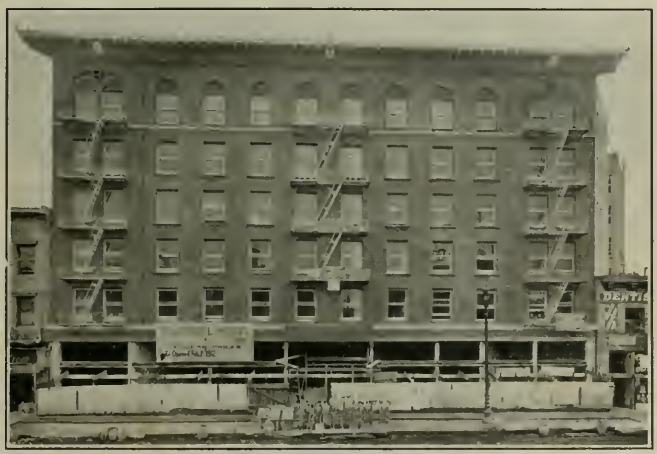

Terminal Hotel, San Francisco, California William Curlett & Son, Architects

Equipped with

One (1) Freight and two (2) Van Emon Passenger Elevators

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Creighton Withers, Architect — L. H. Sly, Owner and Builder

¶ The Largest Reinforced Concrete Apartment House West of Chicago

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of Conveying and Distributing the Concrete is being used in the Construction of this Building

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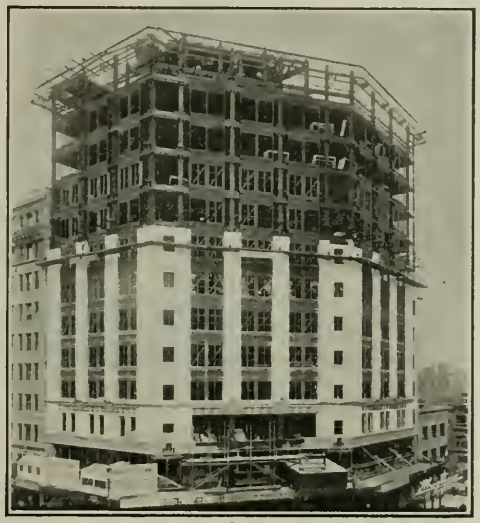

Showing Patent Scaffolding in use on the New Hearst Building,
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Gladding, McBean Co., Contractors

NOTE Patent Scaffolding (seventh floor). This wonderful Safety and Labor Saving Device is now generally used by leading contractors on buildings over five stories in height.

The Patent Scaffolding Company

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READY FOR USE

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A Soft tone, dull glaze finish. Adapted for tinting and finishing interior walls of every description. Washable Wall Finish is the result of expert knowledge and exhaustive experiments to produce a wall finish that would dry with a water color effect and be sanitary, washable and durable :: :: :: :: :: :: :: :: :: :: :: :: :: ::

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No extra thickness of wall required. Joins with a 4 inch stud.

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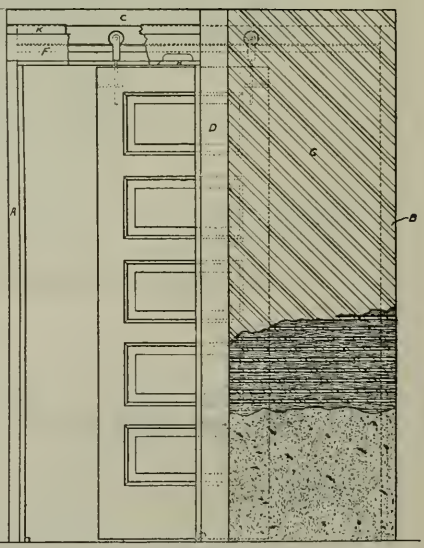

Fig 4

Water Can Not Penetrate

CERESITIZED Concrete

Ceresit waterproofing is a cream white paste which is put into water before mixing the concrete or cement mortar. The water carries the Ceresit uniformly into every portion of the concrete mass and makes it absolutely proof against water penetration even under the greatest water pressure.

Ceresit waterproofing was used in the construction of the German Emperor's Castle at Posen

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Ceresitized cement mortar is an effective permanent water repellant when used as a coating on all kinds of structures built of concrete, brick, stone or tile. It is also successfully used in cement-stucco and exterior cement finishes.

Ceresit is used in all civilized countries.

Write for Free Book "M" and try Ceresit on your next job.

See our exhibit at the cement shows. Booth 221, New York Cement Show; booth 130 Chicago Cement Show.

Ceresit is being used on the new Times Building, Los Angeles.

Ceresit has a world-wide reputation.

Ceresit Factories are located in Chicago, Unna Westphalia; Germany, London, Eng.; Paris, France; Vienna, Austria; St. Petersburg, Russia.

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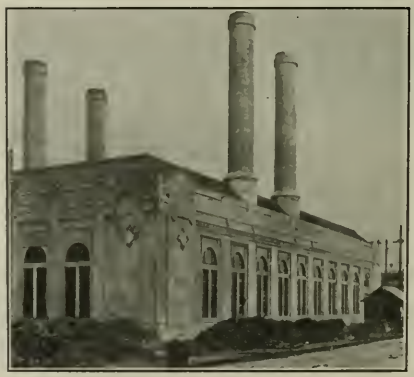
Medusa

White Portland Cement

Water Proof Compound



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Waterproofed throughout with MEDUSA WATERPROOF COMPOUND

HIGH-TESTING STAINLESS

ABSOLUTELY PERMANENT RESULTS

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(For Index to Advertisements, see next page)

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Gladding, McBean & Company, Crocker Bldg., S. F.
Steiger Terra Cotta and Pottery Works, Mills Bldg., S. F.
N. Clark & Sons.....112 Natoma St., S. F.

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Boyd & Moore.....356 Market St., S. F.

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Lord & Burnham Co., Boyd & Moore, Inc., Agents .....356 Market St., S. F.
Risdon Water Tube Boiler, manufactured by Union Iron Works.....San Francisco

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"Blanc," manufactured by Blanc Stainless Cement Company .....Allentown, Pa.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See distributing agents on page 123.]
Boyd & Moore.....356 Market St., S. F.
Petrifax Cement Coating, sold in San Francisco by Sherman Kimball, 503 Market St.
"Kahn System," Trussed Concrete Company, Rialto Bldg., S. F.

CEMENT EXTERIOR FINISH
Blanc Stainless Cement Co., Allentown, Pa. [See color insert for Coast distributors.]
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Eighth and Brannan Streets, San Francisco, Cal. Contractors and specialists in fire-proofing of openings. Contracts taken any place in the United States.

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"La Farge," sold by Waterhouse & Price
59 Third St., S. F.

Medusa White Portland Cement, California Agents, The Building Material Co., Inc., 587 Monadnock Bldg., S. F.

Samuel Cabot Mfg. Co., Boston Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

CEMENT EXTERIOR WATERPROOFING

Glidden's Liquid Cement and Liquid Cement Enamel, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

CEMENT FLOOR COATING

Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. [See list of distributing agents on page 123.]

Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.

Glidden's Concrete Floor Dressing, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.

CEMENT TESTS

R. E. Noble & Co.,
Humboldt Bank Bldg., S. F.

Robert W. Hunt & Co.,
418 Montgomery St., S. F.

Smith, Emery & Co....651 Howard St., S. F.

CHEMICAL ENGINEERS

R. E. Noble & Co.,
Humboldt Bank Bldg., S. F.

Robert W. Hunt & Co.,
418 Montgomery Street, San Francisco

Smith, Emery & Co., 651 Howard St., S. F.

COLD STORAGE INSULATION

Neponset Waterdyke Felt and Compound, manufactured by F. W. Bird & Son, East Walpole, Mass.; sold by Parrott & Co., 320 California St., S. F.

CONCRETE CONSTRUCTION

Esterly Construction Co.....Berkeley, Cal.

Peterson, H. L.....Lick Bldg., S. F.

Willis A. Clark & Co.,
657 Monadnock Bldg., S. F.

CONCRETE MACHINERY

Wallace Concrete Machinery Company's mixers, hoists, loading devices, etc. Agents: Lilley & Thurston Co., Rialto Bldg., San Francisco; Smith-Booth Usher Co., Los Angeles; A. R. Williams Machinery Co., Vancouver, B. C., and the Calder Bros. Co., Seattle, Tacoma and Portland.

CONCRETE MIXERS

Chicago Improved Cube Mixer. Pacific Coast Offices, 789 Folsom St., S. F., and F. T. Crowe & Co.....Portland and Seattle

Foote Concrete Mixers,
Monadnock Bldg., S. F.

Ransome Mixers, sold by Norman B. Livermore & Co....Metropolis Bank Bldg., S. F.

CONCRETE POURING APPARATUS

Concrete Appliances Co., Los Angeles; Parrott & Co., Coast Representatives, San Francisco, Portland, Seattle.

CONCRETE REINFORCEMENT

Clinton Fireproofing System, L. A. Norris, Monadnock Bldg., S. F.

International Fabric & Cable, represented by Western Builders' Supply Co., 680 Mission St., S. F.

Plain and Twisted Bars, sold by Baker & Hamilton, San Francisco, Los Angeles and Sacramento.

Triangle Mesh Fabric, Sales Agents, The Lilley & Thurston Co.....82 2nd St., S. F.

Twisted Bars, sold by Woods & Huddart, 356 Market St., S. F.

CONCRETE SURFACING

"Alkacene" Liquid Concrete, Boyd & Moore, 356 Market St., S. F.

"Concreta," sold by W. P. Fuller & Co., S. F.

Concreto, Worden-Meeker Varnish Co., S. F. and Oakland

Glidden Liquid Cement, manufactured by Glidden Varnish Company, Whittier, Coburn Co., San Francisco and Los Angeles, Pacific Coast Distributors.

CONTRACTORS, GENERAL

E. D. Crowley Co....Monadnock Bldg., S. F.

Esterly Construction Co.....Berkeley, Cal.

F. O. Engstrum Co.,
Fifth and Seaton Sts., Los Angeles

Geo. H. Stoffels & Co., 830 Pacific Bldg., S. F.

Geo. W. Boxton.....Examiner Bldg., S. F.

Henning & Burke.....Examiner Bldg., S. F.

Hoyt Bros.,
Monadnock Bldg., S. F., and Santa Rosa

Ransome Concrete Co.,
Mechanics Institute Bldg., S. F.

Rickon-Ehrhart Eng. & Const. Co.,
1859 Geary St., S. F.

Walter Hough Company, 503 Market St., S. F.

W. H. Bagge & Son., Inc.,
3528 Sacramento St., S. F.

Williams Bros. & Henderson,
351 Monadnock Bldg., S. F.

CORNER BEAD

"Prescott," sold by Boyd & Moore,
356 Market St., S. F.

Union Metal Corner Company, 206 Summer St., Boston, represented on the Pacific Coast by Waterhouse & Price.

CRUSHED ROCK

Natomas Consolidated of California,
203 Hagelstein Bldg., Sacramento, Cal.

Niles Rock, sold by California Building Material Company.....Pacific Bldg., S. F.

J. P. Holland.....Army St. Wharf, S. F.
Phone Mission 5466.

DAMP-PROOFING COMPOUND

Boyd & Moore.....356 Market St., S. F.

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H. D. Samuel Co....Monadnock Bldg., S. F.
John L. Fox.....207 Monadnock Bldg.
"Pabco" Damp Proofing Compound, sold by Paraffine Paint Co.....38 First St., S. F.
Parrott & Co., agents for Genasco Positive Seal Damp Proof Paint.
"Protectorine," Compound, sold by Boyd & Moore.....356 Market St., S. F.

DOORS—FREIGHT ELEVATOR
"Cross" Counterbalance Automatic, Boyd & Moore, Agents.....356 Market St., S. F.

DOOR HANGERS
Johns Door Hanger Manufacturing Company, 832-838 Folsom St., S. F.
Pitcher Hanger, sold by Pacific Tank Company.....231 Berry St., S. F.
Reliance Hanger, sold by Sartorius Co., S. F.; D. F. Fryer & Co., Louis R. Bedell, Los Angeles, and Portland Wire & Iron Works.

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DOORS—SCREEN
Higgin Mfg. Co., represented by Mailler Searles.....817 Monadnock Bldg., S. F.

DOORS—WAREHOUSE
"Cross" Horizontal Folding Doors, Boyd & Moore, Agents .....356 Market St., S. F.

DUMB WAITERS
Energy Dumb Waiters, Boyd & Moore, Agents.....356 Market St., S. F.
Wells & Spencer Machine Company, 173 Beale St., S. F.

ELECTRICAL CONTRACTORS
Butte Engineering Co..683 Howard St., S. F.
Central Electric Co..185 Stevenson St., S. F.
Electric Appliance Co., 726 Mission St., S. F.
Jno. G. Sutton Co.....229 Minna St., S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., S. F.

ELEVATORS
Otis Elevator Company, Stockton and North Point, S. F.
Van Emon Elevator Co..54 Natoma St., S. F.
Wells & Spencer Machine Co., 507 Montgomery St., S. F.

ELEVATOR CARS
Cleveland Art Metal Co., Boyd & Moore, Agents .....356 Market St., S. F.

ELEVATOR DOORS
"Cross" Elevator Doors, Boyd & Moore, Inc., Agents.....356 Market St., S. F.

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FIRE EXTINGUISHERS
Goodyear Rubber Company, 587-591 Market St., S. F.
Pacific Fire Extinguisher Co., 507 Montgomery St., S. F.

FIREPROOFING
Gladding, McBean & Company, Crocker Bldg., S. F.
Roebling Construction Co., Crocker Bldg., S. F.

FIRE PROTECTION
Goodyear Rubber Company, 587-589 Market St., S. F.

FIRE PROTECTION—SPRINKLER SYSTEM
Jno. G. Sutton Co.....229 Mission St., S. F.
Pacific Fire Extinguisher Company, 507 Montgomery St., San Francisco; Branch Offices, Portland, Seattle and Spokane.

FLOOR VARNISH
Bass-Heuter and S. F. Pioneer Varnish Works, 816 Mission St., S. F.
R. W. Nason & Co....151 Potrero Ave., S. F.
Standard Varnish Works, Chicago, New York and S. F.
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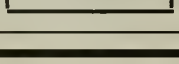

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Locke Foundation Company,
1107 Crocker Bldg., S. F.
GARAGE EQUIPMENT
Bowser Gasoline Tanks and Outfit.
Bowser & Co.....612 Howard St., S. F.
GARBAGE CHUTES
Bradshaw Garbage Chute, sold by C. T. Jacobsen.....524 Pine St., S. F.
GAS GRATES AND LOGS
Backus Patent Gas Grates and Logs, Boyd & Moore, Inc., Agents, 356 Market St., S. F.
GLASS AND GLAZING
California Plate and Window Glass Company, 864 Mission St., San Francisco.
W. P. Fuller & Co.,
San Francisco, Los Angeles and Portland
GLASS—PRISM, ART, ETC.
California Art Glass Works,
768 Mission St., S. F.
United Glass Co.....115 Turk St., S. F.
GRAVEL, SAND AND CRUSHED ROCK
Bay Development Co....153 Berry St., S. F.
California Bldg., Material Co.,
Pacific Bldg., S. F.
Del Monte White Sand, sold by Pacific Improvement Co.....Crocker Bldg., S. F.
Grant Gravel Co.....87 Third St., S. F.
J. P. Holland.....Army St. Wharf, S. F.
Phone Mission 5466.
Natomas Consolidated,
Peoples' Savings Bank Bldg., Sacramento
HARD WALL PLASTER
Empire Hard Wall Plaster Co.,
Pacific Bldg., S. F.
Reno Hard Wall Plaster, sold by Western Building Material Co.,
430 California St., S. F.
Standard Supply Company,
First St. and Broadway, Oakland
HARDWOOD FLOORING
Boyd & Moore.....356 Market St., S. F.
Dieckmann Hardwood Co.,
244 California St., S. F.
Parrott & Co.....320 California St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.
HARDWOOD LUMBER
Dieckmann Hardwood Co., Welch Bldg., S. F.
Niehaus & Co.....548 Brannan St., S. F.
Parrott & Co.....320 California St., S. F.
HARDWOOD LUMBER—Continued.
Strable Mfg. Co.,
First St., betw. Washington & Clay, Oakland
White Bros.,
Cor. Fifth and Brannan Sts., S. F.
HARDWOOD PANELS
Niehaus & Co.....548 Brannan St., S. F.
White Bros., Cor. Fifth and Brannan Sts., S. F.
HARDWOOD VENEER PANELS AND DOORS
E. A. Howard & Co.....Howard St., S. F.
HEATERS—AUTOMATIC
Hoffman Heater, sold by Holbrook, Merrill & Stetson, San Francisco and Los Angeles.
Humphrey Co.,
565 N. Rose St., Kalamazoo, Mich.
Pittsburg Water Heater, sold by Tbos. Tbiehen & Co.....585 Mission St., S. F.
HEATING EQUIPMENT—VACUUM, ETC.
C. A. Dunham Co., Marshalltown, Iowa,
Western Division Office,
Monadnock Bldg., S. F.
HEATING AND VENTILATING
Gilley-Schmid Co., Inc.,
Thirteenth and Mission Sts., S. F.
Jno. G. Sutton Co.....243 Minna St., S. F.
Mangrum & Otter, Inc., 507 Mission St., S. F.
Pacific Blower & Heating Co.,
17th St., betw. Mission and Valencia, S. F.
Pacific Fire Extinguisher Company,
507 Montgomery St., S. F.
HINGES
Stanley's Ball-Bearing Hinges, Stanley Co.,
New Britain, Conn.,
ICE MAKING MACHINES
"The Wizard," sold by the De Laval Dairy Supply Co., Drumm and Sacramento streets, San Francisco.
INSPECTIONS AND TESTS
Robert W. Hunt & Co.,
418 Montgomery St., S. F.
Smith, Emery & Co., Inc.,
651 Howard St., S. F.
INSURANCE
David Duncan .....340 Sansome St., S. F.
INTERIOR DECORATING
L. Tozer & Son Co., 228 Grant Ave., S. F.
Schastey & Vollmer, Inc..522 Sutter St., S. F.
JOIST HANGERS
Western Builders' Supply Co.,
680 Mission St., S. F.

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REPAIRS, INSPECTIONS AND DUMB WAITERS
TELEPHONES: KEARNY 664
HOME J 1124

ARCHITECTS' SPECIFICATION INDEX—*Continued*

KITCHEN EQUIPMENT
John G. Ils & Co.....827 Mission St., S. F.

LANDSCAPE GARDENING
McRorie & McLaren, Westbank building, San Francisco.

LIME
Holmes Lime Company,
Mutual Savings Bank Bldg., S. F.

LIGHTING FIXTURES
Adams & Hollopeter....745 Mission St., S. F.
The Palmer Shop.....1345 Sutter St., S. F.

LOCKERS—METAL
Hart & Cooley Co., Boyd & Moore, Agents, 356 Market St., S. F.

LUMBER
Santa Fe Lumber Co.,
Seventeenth and De Haro Sts., S. F.

MANTELS
Mangrum & Otter.....561 Mission St., S. F.
S. Ginsberg & Co.....1029 Larkin St., S. F.

MARBLE
Columbia Marble Co....268 Market St., S. F.

MASONRY CONTRACTORS
Farrell & Reed.....Gunst Bldg., S. F.
Ferdinand Wagner .....609 Waller St., S. F.

METAL AND STEEL LATH
Roebling Construction Co., Crocker Bldg., S. F.

METAL CEILINGS
Berger Mnfg. Co.....1120 Mission St., S. F.
San Francisco Metal Stamping & Corrugating Co.....Treat Ave. and 19th St., S. F.

METAL DOORS AND WINDOWS
Dahlstrom Metallic Door Co., Western office, Rialto Bldg., S. F.
Metal Window Screens, Mailler Searles, Agt., ...817 Monadnock Bldg., S. F.
Rulofson Metal Window Works, Eighth and Brannan Sts., San Francisco
Waterhouse & Price.....59 Third St., S. F.
Zahner's Monarch Hollow Metal Doors and Trim, Boyd & Moore, Inc., Agents, 356 Market St., S. F.

METAL FIRE PROOF PARTITIONS
Collins Steel Partition & Lathing Co., 757 Monadnock Bldg., S. F.

METAL SHINGLES
Meurer Bros., J. A. McDonald, Pacific Coast Agent.....Third, near Townsend St., S. F.
San Francisco Metal Stamping & Corrugating Co.....Treat Ave. and 19th St., S. F.

OIL
Standard Oil Company, all principal cities in the United States.

OPERA CHAIRS
C. F. Weber & Co.....365 Market St., S. F.
Whitaker & Ray-Wiggin Co., San Francisco and Los Angeles.

ORNAMENTAL IRON AND BRONZE
J. G. Braun.....Chicago and New York
California Artistic Metal and Wire Company, San Francisco
Standard Company, represented by Mailler Searles.....817 Monadnock Bldg., S. F.
Golden Gate Structural & Ornamental Iron Works.....1479 Mission St., S. F.

ORNAMENTAL IRON AND BRONZE—Continued
C. J. Hillard Company, Inc., 211-215 Eighth St., S. F.
Western Builders' Supply Co., Representing The L. Schreiber & Sons Co., Cincinnati 680 Mission St., S. F.

PAINT FOR CEMENT
Adamant Cement, Brick and Plaster Coating. Made by Parker, Preston & Co., Inc.
Bay State Brick and Cement Coating, made by Wadsworth, Howland & Co. (Inc.). [See adv. in this issue for Pacific Coast agents.]
Dexter Bros., Sherman Kimball, Agent, 503 Market St., S. F.
Glidden's Liquid Cement, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
Vitrolite Cold Water Paint, sold by Boyd & Moore.....356 Market St., S. F.
Worden-Meeker Varnish Co., S. F. & Oakland

PAINT FOR STEEL STRUCTURES
Detroit Superior Graphite Paint, manufactured by Detroit Graphite Company. C. W. Pike Company, Coast Sales Agents, 22 Battery St., S. F.
Glidden's Acid Proof Coating, sold on Pacific Coast by Whittier, Coburn Company, San Francisco and Los Angeles.
Neponset Paints, manufactured by F. W. Bird & Son, East Walpole, Mass., Coast Agents, Lilley & Thurston Co., Rialto Bldg., S. F.

PAINTS, OILS, ETC.
Bass-Hueter Paint Company, Mission, near Fourth St., S. F.
"Biturine," sold by Biturine Co. of America, ...24 California St., S. F.
Glidden Varnish Co., Cleveland, Ohio, represented by Whittier-Coburn Co., S. F. and Los Angeles
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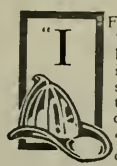

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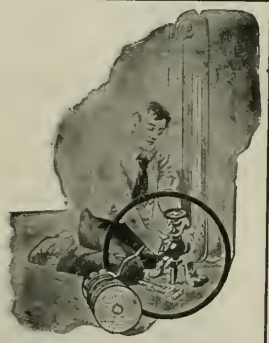

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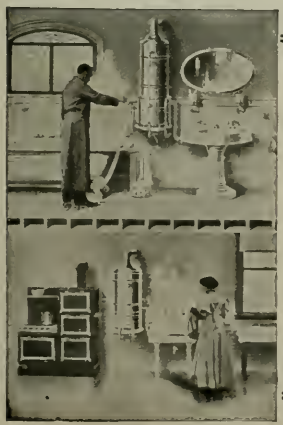

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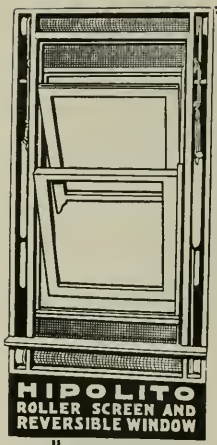

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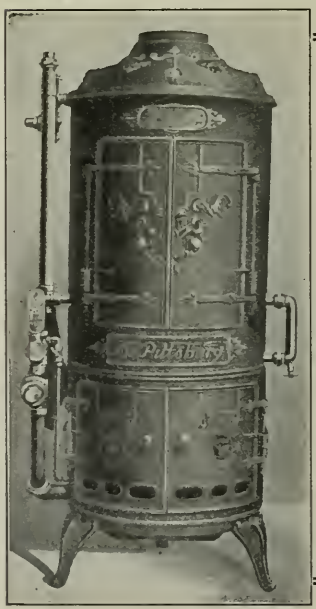

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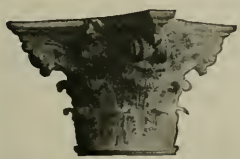

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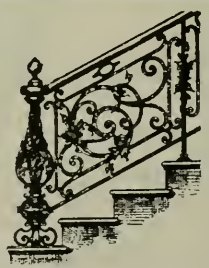

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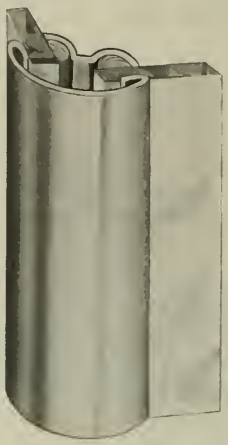

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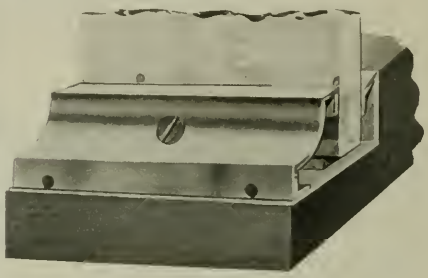

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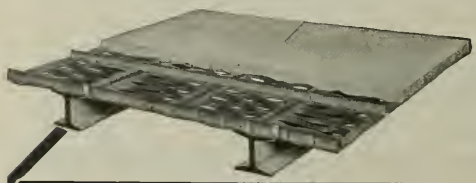

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Issued monthly in the interests of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast.

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(Index to advertisements, page 8)

Imposing memorial tower, the first structure formally sanctioned for erection on the proposed site of the Panama-Pacific Exposition, San Francisco. Designed by H. L. Pelton and P. E. Fergusson. The tower, which is to be a permonent structure that will revert to the city, is to be 850 feet in height above the ground level, and, with the sinele exception of the Eiffel tower in Paris, will be the tallest structure in the world. It will cost $1,500,000.

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THE
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VOL. XXVII. JANUARY, 1912. No. 3.

The World's Fair Site, Civic Center, and Architectural Commission

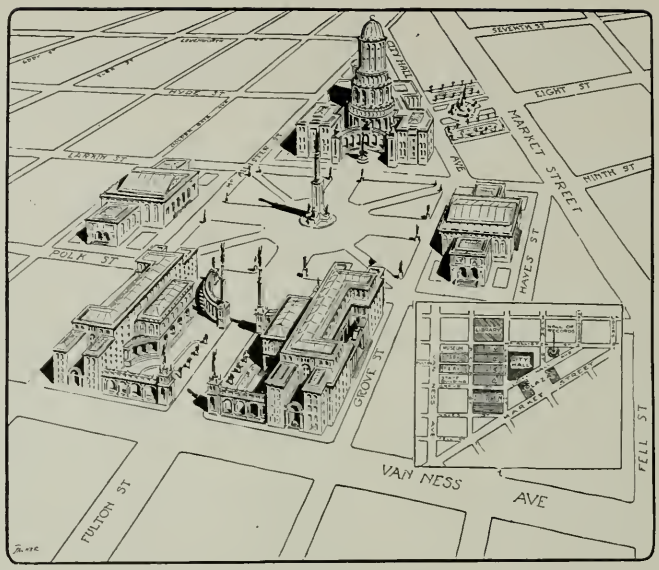
SINCE the New Year began three very important things have happened in connection with San Francisco's 1915 World's Fair. In the first place, the actual site of the big exposition has been definitely decided upon. The fair is going on the waterfront—to North Beach, or Harbor View, as it is more commonly called. The buildings will not be distributed around the city as originally planned; they will be massed in one locality. To have scattered the exposition to three points of the compass would have entailed an enormous outlay of money, and in other ways the committee found the plan entirely unpracticable.

Next in importance to the selection of a site, is the establishment of a civic center. This will be at a point where the old City Hall formerly stood. Much of the property here already is owned by the city, so there need be no fear of delaying the work of construction on account of condemnation proceedings and court litigation. The comparatively small purchases of land that will have to be made probably can be closed long before plans are finished for the municipal group. Roughly, the civic center scheme contemplates the erection of a City Hall on the old site and the inclusion of the four blocks between Larkin and Polk streets from Golden Gate avenue to Hayes street, two blocks between Polk street and Van Ness avenue and McAllister and Grove streets, and the widening of Marshall square to a full 600-foot frontage in Market street by the purchase of narrow strips on each side of the present plaza.

The third and most interesting matter to be decided—interesting to architects particularly—is the naming of the architectural commission that will collaborate with the architectural council in planning the exposition buildings. The council consists of Messrs. Polk, Faville and Ward, and Harris O. H. Connick, director of works. The three latter, it seems, outvote Polk whenever they please—which is most of the time. Polk is said to have promised half a dozen architects on the Coast and in the East a place on the commission. That none of them landed was no fault of the chairman of the council, for he made a valiant but futile fight for his friends. The selection follows:

McKim, Mead & White, New York; Carriere & Hastings, New York; Henry Bacon, New York; Louis C. Mullgardt, San Francisco, and George W. Kelham, San Francisco.

There will be one more commissioner named to make the six as decided upon by the exposition directors. Each member of this commission will be called upon to design at least one of the principal exposition buildings, and he will also be expected to attend three meetings of the Archi-



San Francisco Civic Center Plan as Suggested by Architect B. J. S. Cahill and Adopted by Board of Supervisors

tectural Council. He is to receive no compensation aside from his fee for designing the building. His railroad fare and expenses will, of course, be paid by the fair management.

It is not generally known that the plan of Architect B. J. S. Cahill for a civic center, and which was submitted with sixty or more other plans by as many architects and engineers, is the scheme nearest to the one that has been recommended by the Architectural Council and adopted by the Board of Supervisors.

In making its report on the civic center it was deemed advisable to call upon Edward Bennett, of the Exposition Architectural Board, who, of course, voted with Polk for the Burnham civic center plan at the junction of Market street and Van Ness avenue. John Galen Howard was called in to represent the chapter, and his vote was cast with those of Faville, Ward and Connick for the old City Hall site.

In submitting the majority report on the civic center, Chairman Howard advanced the following arguments: He declared that the old City Hall site was more convenient to the present center of the city's activity; that it offered advantages over the other site in point of spaciousness; that it afforded opportunities for approach without the necessity of widening existing streets or cutting new ones; that it lent itself to loftier and more monumental elevations in the construction of buildings; that freedom from the necessity of opening new streets or changing grades would prevent possible damage suits by property owners; that it did not extend to both sides of Market street and so threaten an interruption of traffic; that it offered a connection with the best topographical route for an extension of

the park panhandle to the civic center; that it was better because it was slightly removed from the main traffic center, and finally, that it would cost less than any other site.

Summing up his advocacy of the old site, Howard said:

"We are not to be understood as reporting against the vicinity of Market street and Van Ness avenue as likely to become an area of active traffic, but the civic center of such a city as San Francisco should be, when the city has so grown as to make Van Ness and Market its center of traffic, a vastly greater thing than merely a group of public buildings around a single paved square.

"We conceive of the civic center of San Francisco as a great metropolitan grouping, upon largest lines, of not only the City Hall and the buildings immediately subsidiary to it, but also of museums, theaters, opera houses, libraries, clubs and other semi-public buildings, churches, galleries, hotels, high-class office and business buildings, State and Government buildings and the like, united and embellished by parks, squares, avenues and boulevards in a harmonious and magnificent whole.

"The one essential condition to such a scheme is adequate opportunity for expansion without destroying the unity of the whole. The old City Hall site is admirably adapted to the beginning of such a civic center as has been foreshadowed. What is wanted is not a type of village concentrated around a single bustling market place, but a superb city organism flowing with larger life and planned for fullest growth."

* * *

Harbor Board Wants Genuine Competition

"IN view of the earnest efforts of the Federal Government—from the President down—to investigate all infringements of the Sherman Act, we are not prepared to accept any of these bids without a thorough investigation to determine whether or not there has been genuine competition among these bidders." With the foregoing words, President J. J. Dwyer, of the Board of Harbor Commissioners, denounced the local cement companies, and postponed the acceptance of their bids for the supplying of cement until they had been thoroughly investigated by the Board.

At the regular meeting of the Board of Harbor Commissioners, January 4th, bids were opened for supplying the Harbor Board with a minimum of 150,000 barrels of cement, to cover a period of two years, and without exception the bids submitted by the local companies—The Standard Portland Cement Company, Santa Cruz Portland Cement Company, Henry Cowell Lime and Cement Company, and the Pacific Portland Cement Company—were the same in every particular, the price being $2.05 f. o. b. the southern or northern terminal of the Belt Line Railway, with a rebate of 10 cents per sack for all sacks returned in good condition to the factory. In view of the sameness in all bids it aroused the suspicions of the Harbor Board that there had not been any real competition in these bids, and in turn President Dwyer delivered to the cement representatives present the foregoing statement, and further advised them that he would consult the State Engineering Department on the matter, to learn if the prices submitted were as low as that which the State is now buying at.

The Board of Harbor Commissioners at their meeting January 11th openly stated that after investigating the matter closely they believed that there had been collusion between the cement companies, and they would therefore reject all the bids, and re-advertise immediately.

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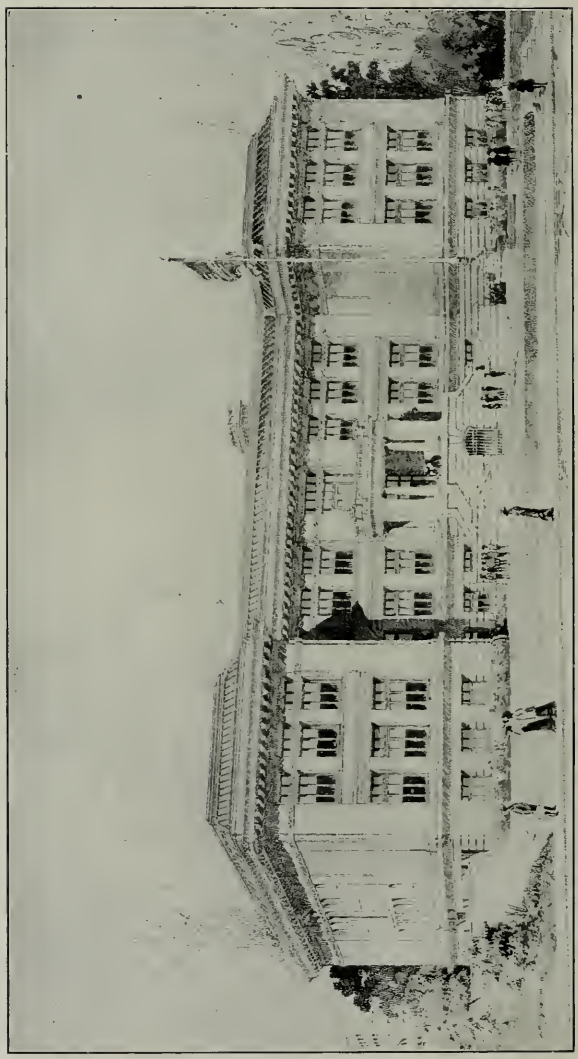
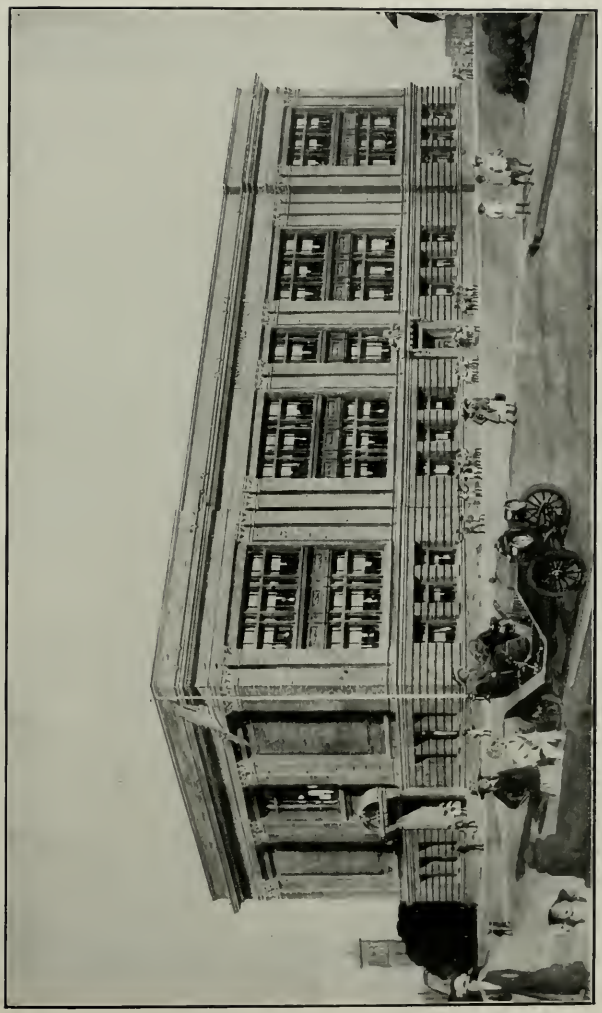
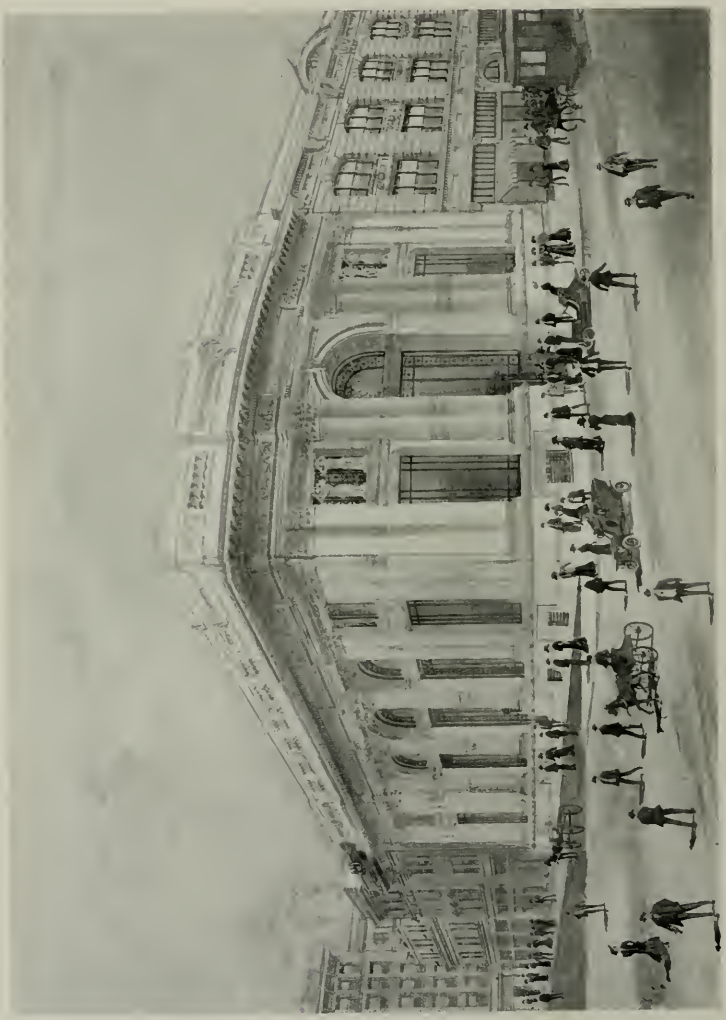


Type of Public School Building Being Erected in San Francisco
Designed by the City Architect



The Denman Grammar School Building, San Francisco
Designed by the City Architect

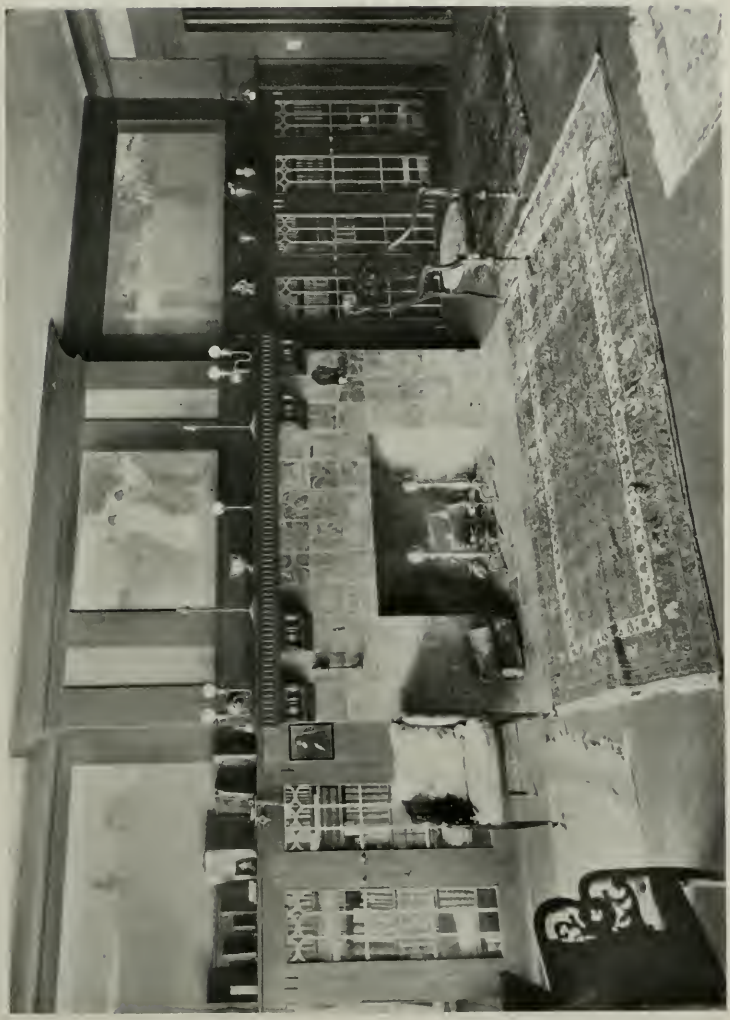


Competitive Design, Union Trust Building, San Francisco — *Frederick H. Meyer, Architect*

Design for a Railroad Station — *D. H. Burnham & Co., Architects*

Railway Station for Western Pacific Company, Sacramento, California — *D. H. Burnham & Co., Architects*

The New Mission Dolores Church, San Francisco
Shea & Lofquist, Architects



Library in Mr. Rudolph Taussig's Residence, San Francisco *Edgar A. Mathews, Architect*

Sketch, Paris
Kenneth MacDonald, Jr., Architect

Ground Plan, Restaurant for an Exposition

Elevation, Restaurant for an Exposition (A Suggestion for 1915)
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A German Clock Tower

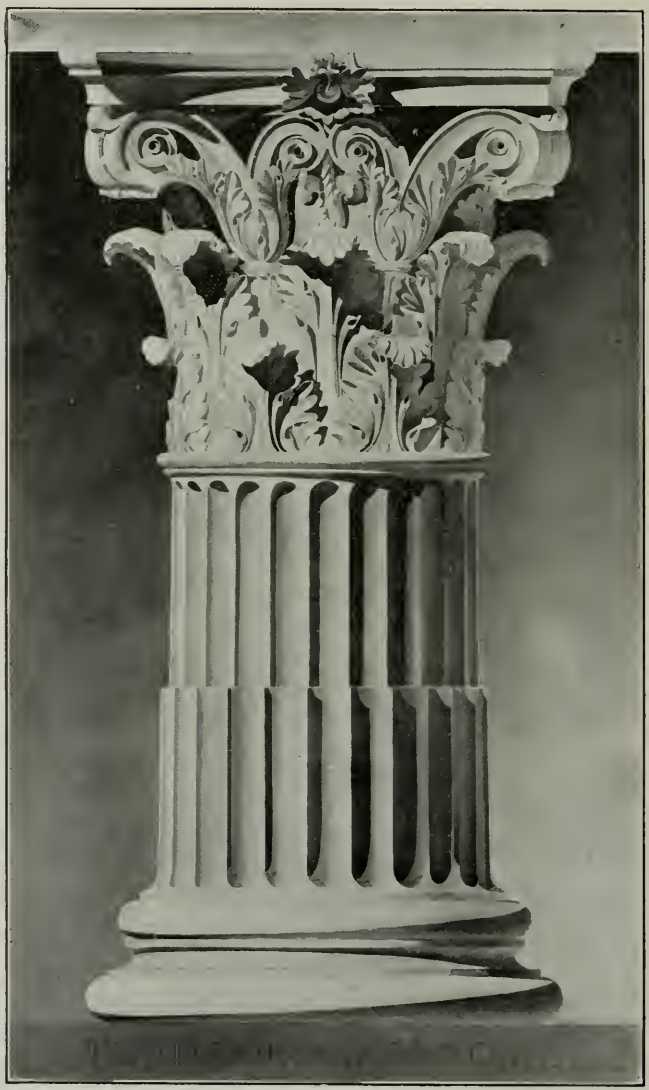
J. J. Baumgartner, Delineator.

An Italian Villa *Design by Abe Appleton, University of California, Second Year*

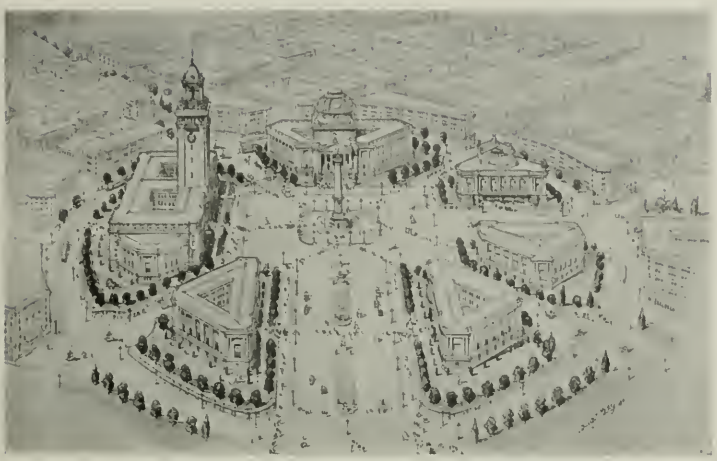
A Suggested Entrance to Lake Merritt Park, Oakland, California

Samuel Arnold, Architect

A Roman Park
J. J. Baumgartner, Architect



Temple de Mars, Rome



The Proposed Grouping of Seattle's Public Buildings

Seattle—The City Beautiful

The report of the City Plans Commission, of Seattle, Washington, is now in the hands of the public. This document represents the accumulated effort of the minds of many men who have steadfastly maintained that a city, to reach its maximum efficiency, must be planned intelligently and with a view as to its future development.

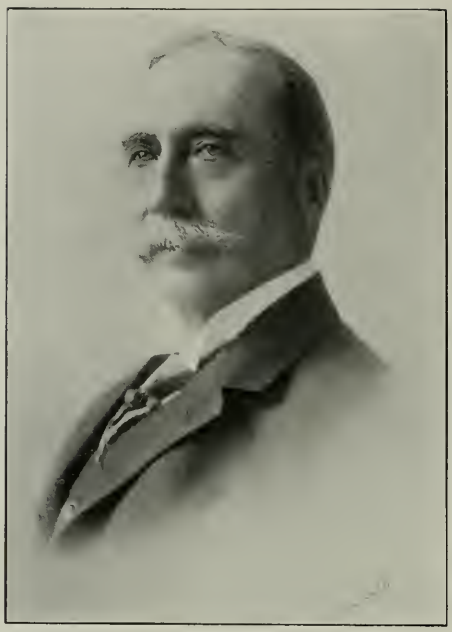
Many of the municipalities of this country have awakened to the fact that convenience of arrangement in plan not only means greater economy in the handling of city affairs, but added beauty and attractiveness, which qualities they have come to realize as a commercial asset. It has been found that haphazard arrangement of streets laid down without relation to the topography has frequently destroyed economic values of many sections of our American cities, and these sections have become very often a veritable blight.—EDITOR.

By CHARLES H. ALDEN, Chairman of the City Plans Committee.*

THE report of Virgil G. Bogue, the Municipal Plans Commission's expert, having been approved by the Commission was presented by that body to the city council September 30th within the time provided in the charter amendment. The city council in accordance with the provisions of the charter must have this report presented to the people at the next general or special election for their acceptance or rejection. The next election thus far provided for is to be held March 5, 1912.

The report contains 236 pages with 68 illustrations in the form of maps, diagrams, perspective drawings of the proposed work and illustrations of existing similar work. * * *

* Mr. Alden is also Secretary of the Washington State Chapter of the American Institute of Architects. Illustrations by courtesy of Municipal League News, Seattle.



Virgil G. Bogue

Proceeding with the introduction the report gives a brief history of city planning, from earliest ages to modern times, with a description of what is now being done in the different cities of our own country to plan for the future and to remedy defects existing on account of lack of foresight in this important matter. "City Planning," it says, "is but the development of the civic idea, old as the human race." The savage races in the arrangement of their tents displayed this civic idea as did the ancient civilization of Peru and Mexico in the remnants existing of their monumental structures. The story of Greece and Rome's civilization was not handed down in its entirety "if the written records of their glories," but is even now being emphasized by excavations showing its high civic attainment. The influence of their ideals lying dormant for a while was awakened by "the reveille of the Renaissance," and has been persistently felt through the succeeding periods to the present time. When Napoleon "in far-seeing plans for the growth of Paris, gave direction to an initial expression of the city's authority and power," L'Enfant in the plans for Washington prepared the way for its later development "in conceptions of order, convenience, variety and grandeur." During the last fifty years particularly, recognition is demanded of "organic unity and intelligent system; recognition of the fact that community life is not an aggregation of unrelated parts and functions, an agglomeration; but a growth, a product, where many elements are vir-

King Street Station, Seattle—A Handsome Building Inadequately Placed

Station at Washington, D. C.—A Convenient and Attractive Entrance to a City

Rue Royal and Madeleine, Paris—Good Street Design, with Effective Location of Building

tually interwoven and inter-dependent." The principal cities of the old world have met or are meeting this demand. In our own country there has been a general awakening evidenced by recent activities in practically every one of our larger cities, besides innumerable smaller towns and cities which are striving "to achieve their ambition for civic betterment."

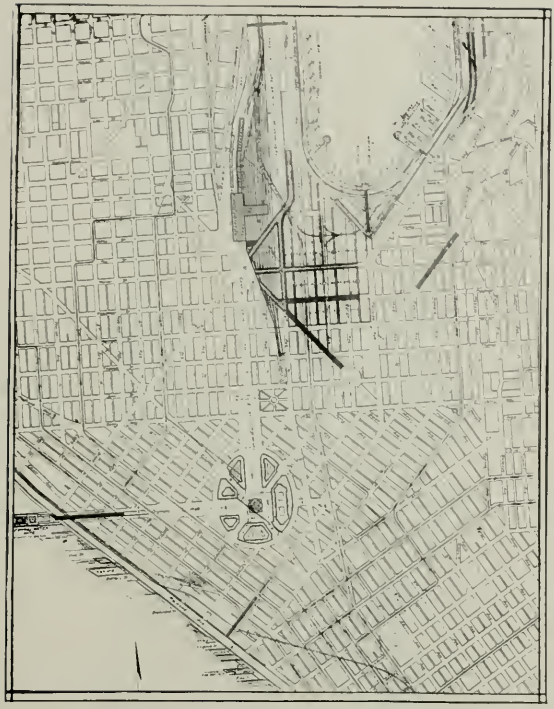
In introducing the report on Arterial Highways it is stated that the correct planning of a city required that its lines of transportation be so arranged as to provide the best facilities for traffic. "The ideal arrangement of main arteries is that which will enable traffic to flow from any point in the city to any other point, in the most direct manner and on the best grades." How this can be effected in Seattle, with the peculiar topographical conditions existing, is gone into at considerable length with a discussion of the widths and grades recommended to meet the present and future demands within the limits of area established by the commission. It was found that in numerous cases arteries on grades not exceeding three per cent could be located, although in a few instances grades of five or seven per cent would be necessary, and that the cost of these would be reasonable. In regard to the location of the civic center it was found that the lines of main arterial highways tended to cross or approach each other near Fourth avenue and Blanchard street, slightly west of the present center of population and the logical outcome of careful study was a decision that the civic center should be placed at this point.

Under the heading "civic center" reasons for its establishment are given with a discussion of the questions involved. The foremost question is that of economy. A civic center makes for economy in the conduct of business in and between the several city departments, their proximity making easy their intercommunication, duplication of records and documents is obviated, number of employees and amount of general service is reduced and supervision of work expedited. Centralization effects a saving in time and money for people obliged daily to visit different departments, and their grouping serves also the convenience of strangers and those who visit these departments but seldom on account of lack of familiarity they might have with locations widely scattered. It is also desirable to make the branches of a city government equally accessible from all sections of the city which is practically impossible with an unrelated distribution.

"A civic center should embrace an area sufficient to accommodate, on great occasions, large gatherings of citizens. It should afford ample space for the accommodation of pageants and for the formal reception of delegations from other cities or foreign countries. It should also furnish a proper setting for important buildings of a public or semi-public character, detaching them from structures of inferior nature and giving distance from which they may effectively be seen, heightening the effect of separate buildings by the vicinity of others of similar distinction. The impressiveness of a group of imposing buildings is greater by far than the sum of the effects of each standing alone amid meaner structures.

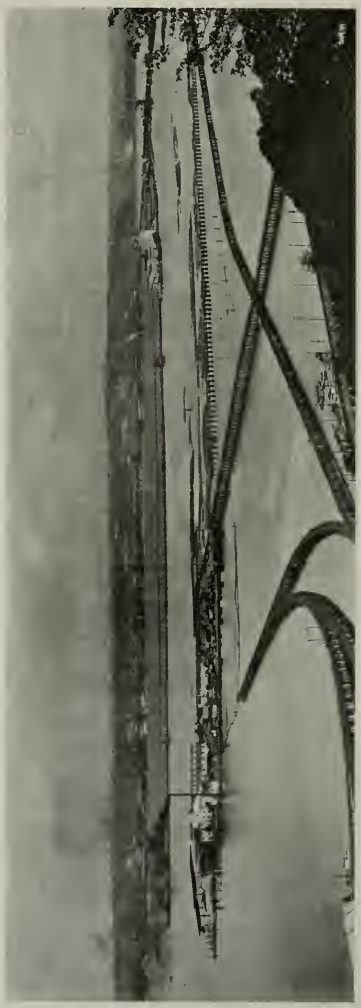
"It is right and proper that the city should benefit by this added effectiveness. To expend large sums in the construction of noble architecture, only to have it almost wholly effaced in a crowded business street, is the height of folly and extravagance. It is even more, because indicative of a lack of discrimination between the ability to pay for and the instinct to appreciate and enjoy the worthier products of civic life.

"Thought, therefore should be given to the morrow of greatness and enthusiastic preparation should be made for the elevation of those fitting insignia of metropolitan rank among cities, noble and imposing houses of national and municipal government, including its federal buildings, library, art museum and auditorium."



Suggested Development for Lake Union and the Civic Center, Seattle

Public Library, New York City—Arbitrary Street Planning. View of Building Ineffective



Harbor Island—Seattle's Opportunity for Terminal, Warehouse and Dock Development

In the creating and treatment of Seattle's civic center due respect and proper regard was given to all the several elements. By instructions of the commission the plan must meet the condition of a city of a million people and "it is obvious that the location of a civic center should be at a point as near the probable center of population, when that population shall have reached a million, as the approximate center of the probable future business area will permit," * * *

"A civic center which is to signify the character, the force and the confidence of a town like Seattle, where only the loss of the commanding qualities she has always possessed can delay a wonderful advance to prominence among world cities, must be more than a make-shift—it must have the air of far-seeing urbanity which cannot be manifested within narrow limits.

"Such a location is the one proposed at Fourth avenue and Blanchard street. Not interfering with the natural trend of business advancement, it yet occupies a site serving all the people with impartiality. It has a magnificent setting, visible from all the environing hills and from the harbor and Puget Sound. To appreciate its full significance, one has but to regard its inspiring possibilities from the surrounding heights or from just beyond the immediate harbor line. Equipped with buildings worthy of a city destined to rank among the great world ports, the voyager approaching the busy water frontage of the coming days, must find Seattle almost without peer in gracious visual command.

"Not less impressive would be the view within and from the center itself. Detached from structures of more ordinary character, by a circumferential thoroughfare, its noble buildings would emphasize the natural and exceptional beauty and dignity of their environments.

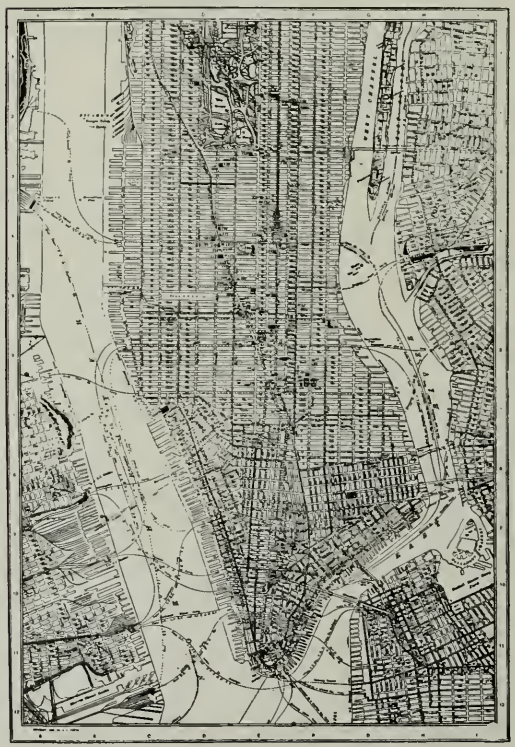
With Mount Rainier looming over the city on the south, the rising terraces of encircling hills, the lofty snow-capped Olympic peaks closing the westward view beyond a harbor unsurpassed, it would appear that greater opportunities for high and permanent distinction never fell within the privilege of a municipality. No more extravagant is the hope of the culmination of this project than, but a few years ago, would have seemed the prophecy of Seattle's existing actuality.

"The general plan prepared by Olmsted Brothers, under which park and boulevard development is now proceeding, covers the situation so thoroughly within the present city boundaries that nothing need here be proposed in the way of extensions. Beyond the city limits, however, in the territory over which the future "Greater Seattle" must spread, parking features will be required and should be liberally provided for well in advance of the city's expansion." The only suggestions applying within the present city limits are to meet the "increasing and just demand for more playground area."

Several suggestions are made for suitable parks outside the city limits from Richmond Beach on the north to Three Tree Point on the south, with areas around Lake Washington and from Three Tree Point to the Duwamish river. In many cases these are extensions of the Olmsted system. The report also provides for extension along certain portions of the arterial highway system offering easy and direct connections between proposed park areas. It is suggested that arteries offering such connections to parks be considered as boulevards, combining parkway features with those of traffic streets. Other areas are not to be immediately used for commercial purposes are recommended to be parked.

Playgrounds are considered at some length and sites selected for the present and future needs of the city. Voluntary, private effort, it is recognized, has "gone far enough to convince many people that the conditions

Perspective of Harbor Island—Scottle's Opportunity for Terminal Development



Plan of New York City, Showing Arbitrary Rectangular Arrangement of Streets; no Direct Provision for Traffic Between Important Points; no Provision for Large Public Buildings.

surrounding childhood determine in a large measure the character of the man; that childhood environment actually counteracts inborn characteristics and tendencies; that to improve conditions, even for a portion of the child's waking hours, is a powerful factor in the evolution of the best that is in him."

In suggestions for suburban boulevards high tribute is paid to Seattle's natural scenic advantage, "possibly unparalleled by any city of the world." "The Cascade and Olympic ranges are the borders of a landscape as varied in its natural features as any similar area upon the globe. Combined with an unequaled summer climate, Seattle, sitting upon her hills amid this wealth of scenic environments, should develop as the tourist center as well as the commercial metropolis of the Pacific Northwest."

Under Municipal Decorations street intersections are treated as points of natural traffic congestion, and at the great business centers of diverging avenues open spaces of ample size are recommended, with a less severe treatment for the crossing of main traffic lines in other districts. Special concourses and esplanades are planned for vantage points; one at Duwamish head is suggested with adequate surroundings. Here should be located, whenever opportunity may offer, the great civic monument of Seattle, typifying in some appropriate design the spirit and the purpose of the city."

A strong plea for limiting the heights of buildings is presented. The evil effect of the skyscraper in the curtailment of daylight and fresh air is referred to, as is also the importance of the question from other standpoints of health, fire hazard and congestion of transportation. It is recommended that the height of buildings be fixed at an elevation proportionate to the open area. The desirability of using light colored building material where possible is mentioned, "to brighten the aspect during the lowering days of winter."

By far the larger portion of the report deals with Seattle's development as a port. Quoting the first sentences appearing under Harbor Improvement: "It is conceded by all that the key to the development of Seattle into a great metropolis, lies in a deliberate preparation to care for her fair share of the world's commerce." "A study of the commercial ports of the world indicates that these ports have not depended for development upon chance or destiny"; their prosperity is due to increased harbor facilities. The work accomplished in the great seaports of the world is cited with the benefits resulting therefrom, also the vigorous action being taken by other Pacific Coast ports, showing that they are alive to the situation. "Commercially speaking, when a city ceases preparation for the future, it ceases to grow." Seattle's splendid opportunity, particularly with a view to the opening of the Panama Canal, is forcibly presented with an earnest plea that we take advantage of our unsurpassed natural opportunity by artificial development. "The merchant marine of the world is not seeking a merely well sheltered harbor. It is demanding ports where cargoes may be obtained or unloaded with the greatest dispatch and least cost." Continuing to present the importance of this work to the city: "Of all the recommendations to be made by the Municipal Plans Commission, those concerning the improvement and development of Seattle's harbor are of ranking importance. The increase in taxable wealth alone, aside from the income to be derived from the operation of the port, will more than pay interest charges on the bonds and retire the principal when due." "Every judicious investvent in harbor improvements should tend to decrease, rather than increase, the tax rate." "It is not necessary at once to provide all recommended facilities. It is essential, however, that a beginning be made."

"In no other department of public interests does precedent stand for more. For a good many years city after city has stepped into the ranks of the enlightened bidders for a worthy share of the commerce of the world. Not one case can be cited in which failure has resulted from generous, well applied effort to push to the uttermost all chances for notable improvement; and, in most cases, results have come so speedily as to be startling. Original outlays have been justified by satisfactory returns, encouraging still further drafts on the civic treasury and abundantly proving the substantiality of civic enterprise."

Speaking of Seattle: "Not only have natural position and environment given almost audible prophecy of the may-be of the years to come, but unlimited prediction can be hazarded as to what the mineral resources of the far North will bring to the port most accessible to their disposal and exchange."

The "varied treatment" of Seattle's "irregular and diversified water front," is considered under the heading "Port of Seattle," and for convenience in this consideration the entire water front is divided into ten sections or "districts," each having the treatment suggested that its peculiar situation warrants. The West Seattle district is found generally unsuitable for extensive industrial development, but well adapted for pleasure boats and the smaller industries. The Harbor Island district, on the other hand, is found to be admirably adapted for development as a "great harbor, freight and industrial terminal, one of the essentials of a great port," as this is where "commodities may be handled and stored in large quantities with the greatest possible economy," and is a location that lends itself readily to "convenient railway connection and offers attractive berthing to the vessels of the larger tonnage."

"Failure to make the most of the opportunity to develop a port terminal in the Harbor Island district, might have far-reaching results detrimental to the future of the city." * * *

The concluding 56 pages of the report give complete engineering data describing the arterial highways—the proposed parks and playgrounds and the rapid transit routes, their treatment, boundaries, grades, etc., made from existing city maps and new surveys.

The "Closing Word" of the main portion of the report is worth quoting at length.

"Recognition of Seattle's needs has given rise to a new civic movement in the right direction. The propriety of such recognition has been made clear by every suggestion and this movement shows a readiness to take advantage of every suggestion and help in the upbuilding of a community having possibilities second to none.

"These possibilities have been recapitulated in the foregoing pages, and plans for their crystallization into actualities have been detailed. Every statement, suggestion and general scheme or plan therein submitted has been the outcome of a careful study of the situation.

"Expenditures of large sums will be demanded as the years roll on, but a community which has already accomplished enough to excite world-wide admiration will find means to continue a good work with but one possible outcome; especially in view of the certainty that work performed haphazard and piecemeal, or which does not follow an approved general plan, will cost more, produce less and be less creditable."

Acoustics in Architecture—An Exact Science

By ALEX. F. OAKEY, San Francisco, California.

MANY eminent scientists have glanced at this subject and contented themselves with a more or less luminous suggestion now and again: their life work being prescribed in other ways. Many architects have given the matter some consideration when they were obliged to, but have been discouraged by the evident sacrifice of time and money involved; or have supinely accepted the prevailing notion that the question is not completely answerable under all conditions.

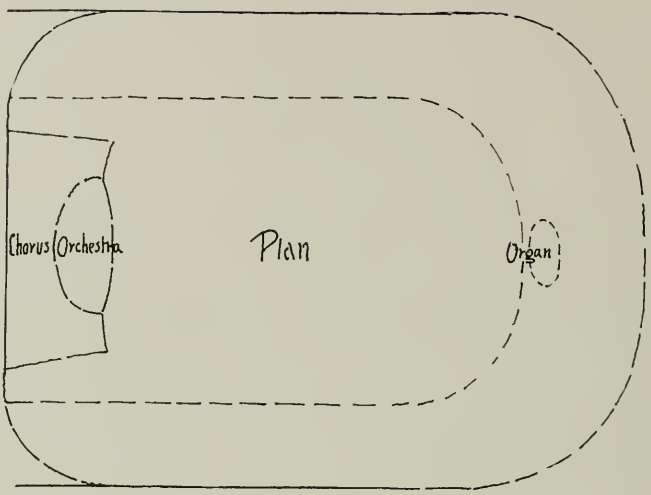
Some two thousand years ago Vitruvius maintained that an architect should be a musician for the practical and esthetic reasons he cites; but he could not forsee how essential this equipment is in the solution of acoustic problems. The fact is that we are beginning to see that the thorough understanding of anything involves the general understanding of everything else.

Many people believe that what they do not consciously feel or see is of little practical importance; unmindful of the fact that much the larger part of their existence is unconscious or sub-conscious.

In this matter of hearing, nature provides a complex sensitive organ together with more or less aptitude; and these can be trained like other senses to extraordinary perception. One cannot enjoy a picture that is hung too high in a bad and insufficient light; and one cannot appreciate a musical composition in an auditorium that is disproportioned, ill-formed, badly ventilated and of too great or too small a capacity for the audience. We should be in physical vibratory sympathy with the tones; and only in a well proportioned, well formed body of pure air of the same temperature and humidity throughout, of the right trend throughout, can we sit in the midst of the life of the composition and feel its pulse quicken our own. The auditory nerve lies in the brain side by side with the nerves of the heart and the lungs, and shares with them sympathetically all its joys and sorrows. A whisper of a long remembered voice agitates us, and we blush or pale.

The quality of the human voice, as tenor, baritone, soprano, etc., is not only determined by the length and thickness of the vocal cords, and the length and form of the bronchial tubes, but by the form of the mouth cavity and its proportions. The arch of the palatal bones forming the roof of the mouth is the ceiling of this resonant hall. Of course many other considerations are involved, such as the teeth, the size and flexibility of the tongue, and the size and flexibility of the lips in delivery; but the fact remains that from casts of mouth cavities the qualities of voice can be identified.

The ear appreciates the quality of a tone as emanating from a human throat in its various qualities, as from an organ, a trumpet, or a violin by the agitation of the ten thousand little "rods of Corti" of the labyrinth of the "inner ear"; and these little rods are excited by waves in the fluid of the labyrinth, caused by shocks against the membrane that closes the main opening into the labyrinth from the "middle ear." These shocks are conveyed by the "stirrup" from the "anvil," from the "hammer," from the "drum," from the "tympanum," from the tremors of the air in the "auditory canal." All this and much more in a horizontal distance of two inches more or less, never in any individual more than 2⅛ inches, more than one inch being the auditory canal, by a vertical distance of ¾ inch: it will be admitted that in ministering to this—organ of infinite delicacy no happy go lucky, hit or miss procedure is likely to serve.



The owners and managers of auditoriums seldom take any serious thought about acoustics, because the public does not demand excellence; and, it is only by constant hammering by the more exacting that any standard of achievement is ever established.

There are at most some dozen auditoriums in the whole world that are acoustically satisfactory; and these are not alike in form, dimensions, seating capacity or materials of construction. That these elements of design are not alone the essentials of acoustic success is proved by the fact that careful copies of these auditoriums in all visible respects, have invariably been disappointing; while alterations or repairs of the originals have often been disastrous. The main reason why water is a better conductor of sound tremors than air is because it is not stratified in different degrees of heat, humidity and vitiation.

Sound tremors are accelerated by moist cold air, retarded by dry hot air, and dissipated by vitiated air. Vitiated air is the heaviest, and hot air the lightest, while cold air takes its place between the two. Sound tremors will pass by the easiest route not the shortest; and will pass round a column of air of higher temperature or less humidity than the surrounding space. There is a tendency of the air in interiors if permitted, to stratify horizontally, to form pockets or columns vertically from various causes; and if these causes are not constant they are as difficult to detect as the cause of a leak in a building often is.

The peculiar properties of different materials, the lessons to be learned from the construction of musical instruments, the rules and formulae to which the whole science has been reduced, will concern us later; for perhaps enough has been asserted and suggested to promise a thoroughly co-ordinated system of theory and facts.

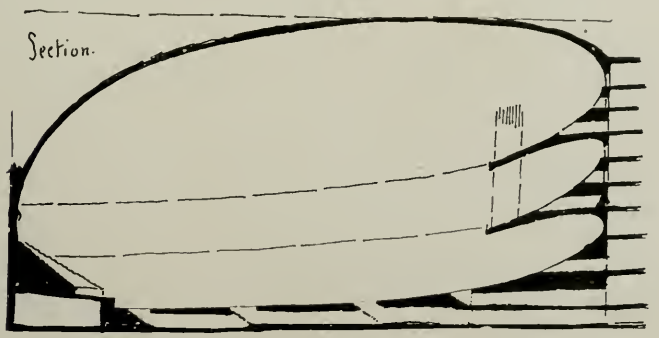
The only perfect auditorium is the "auditory canal" of the human ear: a tube a trifle more than an inch long, a varying diameter of about ¼-inch; by a contraction of this diameter divided into two chambers extending inwardly and outwardly in different directions but with a common axis that describes a parabolic curve—always parabolic in cross section and the whole always in harmonic proportion, lined with sensitive membranes and filled with perfectly homogeneous air—in temperature and humidity.

This auditorium is built for the sole benefit of one auditor at a fixed point and therefore would not serve our purposes; but the principles of its construction are our main reliance, because what we must construct is an additional external auditory canal, which must convey to the smaller ones every slightest tremor unaltered, as the smaller ones do to this one listener.

To accomplish this we must contend with several conditions that do not obtain in the Auditory Canal: vitiation of air, the absorbent quality of the audience, the interference of each row of auditors with the row behind, the relative space or capacity per capita, forms, dimensions and materials.

The only vitiation of the air in the Auditory Canal is caused by the exudations of wax which is the waste from the lubricant which prevents the drying and hardening of the lining membranes, but the vitiation is so slight as to be negligible; while the wax performs the important office of collecting at the orifice all minute particles of dust that would enter.

The vitiation of the air by a breathing perspiring audience is so great that we must draw it out by fans at 30 cubic feet per minute per capita; and to prevent direct currents to a few certain points, the vents must be distributed on the floor lines throughout the auditorium, at least one for each ten seats. The warm pure air (preferably filtered) at a low pressure (preferably by indirect radiation) must enter at the stage end at each side of the stage, and sufficiently high to avoid creating an atmospheric curtain of warm air between the entertainment and any auditors. In theatres the whole stage compartment must be heated one or two degrees more than the auditorium, at a higher pressure, and the lower strata drawn off more



rapidly on each side of the curtain opening, to avoid any supply of cold air to the auditorium, which would inevitably interfere with the steady trend of the whole body of air toward the audience. For the same reasons the lobbies and approaches should be equally heated and ventilated, so that no inrush of cold air may disturb or check the conditions we have established.

Nature rarely fails to provide a factor of safety, and by more than one thousand experiments the quantity of absorbent material, such as cotton, that can be put in the auditory canal without appreciably impairing the hearing of a normal ear, has been determined: and to corroborate this result experiments of various kinds have been made in all sorts of places under various conditions. We need not inflict upon the reader the account of more than one of these experiments; the most delicate and conclusive one.

The interior of a fine violin (the most perfect thing man has yet made) is the next best auditorium to the auditory canal, because although it is made to produce sonorous tremors instead of to receive and appreciate them, it has all the characteristics of the auditory canal except the form. And experiment proves that the same relative quantity of absorbent material can be put in a violin as in the auditory canal without appreciably affecting the tone.

This fact was determined by selecting an average sample of clothing material from about one hundred samples: after weighing equivalent areas in apothecary's scales, cutting this sample into small equal squares, unravelling these and knotting each bunch of fibres on a thread like the tail of a kite, poking them into the violin through the "f" cuts, and counting them till the tone was affected. It will be seen that the exact surface of material is known, the exact weight, and the exact cubic mass; and as we have ascertained the exact cubic contents of the violin, after many experiments with different instruments including violas, violincellos, and the mouth cavities of singers. We have established the quantity of absorbent material in the clothes of an audience that any particular auditorium can accommodate under favorable conditions; and this quantity is translated into a certain number of auditors for the cubic capacity by determining the average surface presented by an auditor, which surface after many and various trials and experiments has been definitely determined. There is in these matters a maximum and a minimum, below or above which it is unsafe to go.

An auditorium that is quite satisfactory for musical purposes may easily be unsatisfactory for speaking; because musical tones cause regular proportionate tremors that are more easily transmitted. It is not at all a question of force; a musical voice above the average pitch with clear enunciation in speaking will be heard without effort by the speaker or the audience, where the strenuous bellowing of a raucous voice will seem a distant jumble of unintelligible noise. So that in auditoriums used for speaking it is wiser to employ the minimum in regard to space per capita, the maximum in regard to ventilation, and the nicest adjustment of forms and proportions, in order to assist a poor voice and a bad delivery, which often accompany great ideas and felicitous language.

Differences in degree often become differences in kind, and this is especially true in the proportionate dimensions of apartments and halls for any purpose; and also of the forms employed.

Whatever the unit of measurement the limitations of the individual control us. For instance: with a unit of twenty-five feet, we may take 3

width, 4 length and 2 height—75 x 100 x 50, but if we would expand, another unit must be chosen; and some one dimension is always under control to realize harmonic proportion. The necessity for harmonic proportion is because the wave lengths, however they diminish in transmission, are always proportionate. The largest auditorium it would be possible to build successfully in which a single speaker could be heard, would have a seating capacity of about 10,000, and about 1000 chorus and orchestra. More than half on the floor and the remainder in two galleries; and then we would have to reinforce the speaker's voice by placing a large pipe organ on the first gallery, running up through the second gallery opposite the stage. This organ would follow and respond to every cadence or inflection of the voice. Such an auditorium would be 180 feet in width, 240 feet in length and 120 feet in height, with a unit of 60 (though these figures do not imply the cubic space owing to diminution) or 2 to 3 to 4. This proportion suggests a consonant chord, and as tones of higher pitch are more insistent in transmission, we choose the octave above the stave; identify the tones and determine the three parabolas that vibrating strings sounding these tones would describe. These parabolas control the forms or sections in plan and elevation, and we find that our floor plan is a parabolic cup, as also our walls and ceiling. That our stage is in the auditorium, not an addition to it, and the forms of the undersides of the galleries are determined in the same way; as if the spaces under the galleries were complete auditoriums. The accompanying outlines may make this description clearer; but the compass of a magazine article admits of little more than a general discussion of all the questions involved.

It should be asserted unqualifiedly that only in very small auditoriums with a seating capacity of 250 to 300 on the floor, and perhaps another 150 in a gallery, can acoustic success be achieved with a level floor. The reasons are obvious from what has already been asserted. As to materials of construction: resonant material for wall and ceiling surfaces is often a great assistance where for any reason we need reinforcement, and now that the ordinances properly prohibit the use of thin wood plates or panels with a resonant air chamber behind them, we have recourse to 8 oz. bronze plates which will serve well. However under almost all conditions we shall find ordinary soft plaster on furring quite satisfactory if all other requirements are completely provided. There is no sort of excuse for echoes unless we intend to construct them which we can very easily. If the focus of any parabola employed is below the floor line, echo is impossible, because all reflections are to the focus and thence parallel to the axis and are at once absorbed by the audience below the knees.

It is hardly necessary to say that projections from the walls and ceilings, or deep panels as for skylights, are to be avoided; in short anything that tends to deform the surfaces we have carefully designed introduces confusion. The very few inches for the realization of decorative detail is of no consequence.

In all of the foregoing there is no statement that has not been abundantly proved by practical experiments of great variety under all conceivable conditions, extending over Europe and the United States for more than forty years.

The writer is indebted more or less to some dozens of persons in their various capacities, but to no one as much as to the late Professor Helmholtz, who by his marvelous work, "The Sensations of Tone as a Physiological Basis for the Theory of Music," brought order out of chaos, when the writer was about to abandon the whole matter as hopeless after years of patient labor and the expenditure of a good deal of money.

An Architect's Tribute to Senator Newlands

Editor The Architect and Engineer of California:

Enclosed is a clipping of an article from the Chicago Record-Herald of June 9th, 1911, by the late Wm. E. Curtis, suggesting Senator F. G. Newlands, of Nevada, one of your Pacific Coast States, as a presidential possibility.

This article deals in detail with Senator Newlands' achievements and the constructive legislation that has resulted from his tireless efforts in the United States Congress, but touches very lightly upon his services to Art, Architecture and Civic betterment.

For the purpose of fully ascertaining Senator Newlands' interest in these subjects, I have collected the enclosed pamphlets and clippings, an examination of which will disclose that he has been exceedingly active, and at all times a valient champion of Arts, especially Architecture.

The pamphlet "The White House Restoration, Compensation of Architects, February and March, 1904, shows that Senator Newlands, nearly eight years ago was the only member of the United States Senate who had an accurate knowledge of the functions of an Architect; and he showed his great sympathy for our Art when he stood on the floor of the Senate, as the sole and only defender of our profession.

Senate Bill 4845 was introduced March 7th, 1904, by Senator Newlands. His remarks on this bill on the 8th and 30th of March resulted in its adoption; preserving for the Nation's Capital the McMillan Park Commission Plan, which was very seriously endangered at that time by the proposed location of the Agricultural Department Building on the Mall.

January 19th, 1909, Senator Newlands introduced a bill for the "Bureau and Council of Arts," (S. 8608--60th Congress, 2nd Session). A copy of this bill, together with extracts from the proceedings of the 42nd Annual Convention, American Institute of Architects, is also enclosed.

The clipping from the Washington Post indicates that the Senator entertains no illusions as to the suggestions of his friends who are familiar with his activities in other fields, comparatively few however, even among Architects, know of his interest in, and the service he has rendered for Art and Architecture; but it shows the great advance our people have made, to mention him for the high office of President, as over seven years ago his defense of the Architects subjected him to criticism by public men unable to appreciate or understand the profession.

These pamphlets and clippings concerning Senator Newlands' services to Architecture and the kindred arts, are sent you so that The Architect and Engineer may have an accurate record of his activities and achievements, on subjects of interest to its readers.

Very truly yours,

LEON E. DESSEZ, Architect.

New York, N. Y.

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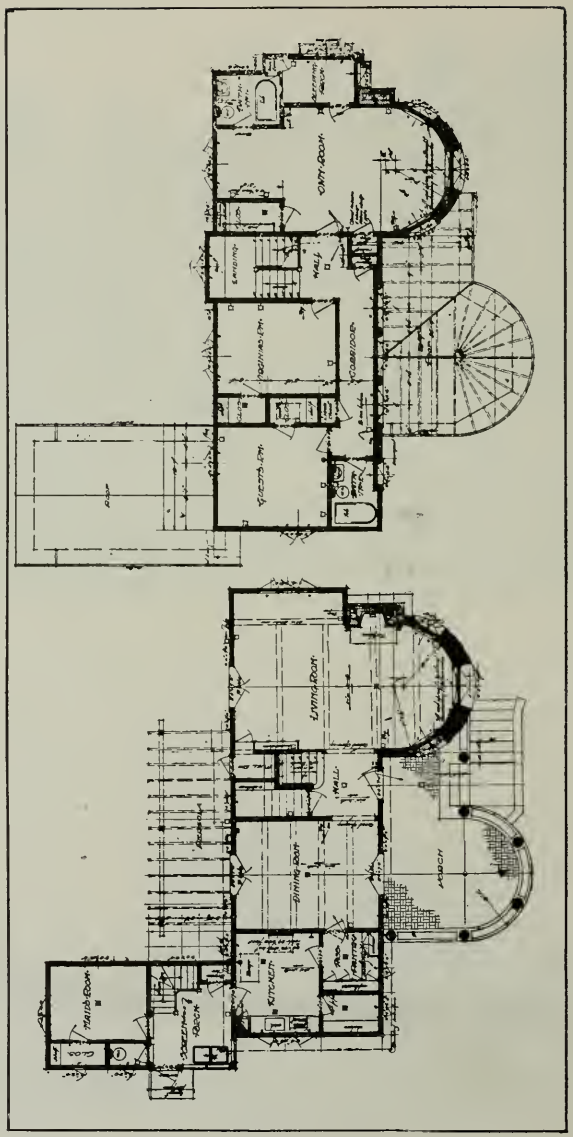
* *

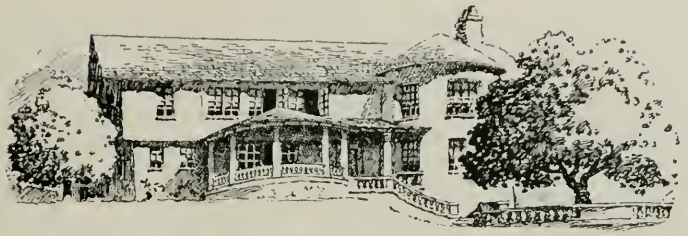
"You have had your pie and coffee," said the lunch-wagon man; "anything else, sir?" "Yes," murmured the drowsy customer, as the midnight bells chimed forth, "be a good fellow and drive me home."—Chicago News.

Ewelme, Bronx, London, England *Walter Cave, Architect*

House by Harris Allen



First and Second Floor Plans, House of Architect Elmer Grey, Oak Knoll, Pasadena, California



House for Architect Elmer Grey, Oak Knoll, Pasadena, California

An American Twentieth Century House

ARCHITECT Elmer Grey of Los Angeles, is building himself a house at Oak Knoll, Pasadena, in Southern California, that is the embodiment of simplicity, comfort and convenience. It is just such a house as one would expect a practical professional man with a strong artistic temperament to build. While ornamentation is a useful adjunct, it is not an essential of good architecture and the production of pleasing and satisfying effects with simple lines and plain surfaces is the real test of an architect's ability. The plain house that is really good in point of design never offends the eye and even the most unappreciative layman will admire it although he is utterly at a loss to understand why.

Mr. Grey's new house is an embodiment of American twentieth century ideas. There is no thought of display. The home feature is paramount. Having determined to his own satisfaction an arrangement of rooms that conformed to his views of the comforts and conveniences of a home he designed an enclosure to fit the plan. There was no preconception of what the exterior of the house should be in point of architecture or materials.

A splendid location in beautiful Oak Knoll was chosen by the owner for his new home—a sloping lot on El Molino avenue at the intersection of Woodland road overlooking a clump of fine old live oaks on a spot that has been reserved for a park. Just in front of the house on the slope of the lot is a large live oak which has been incorporated into the general building and ground scheme. The lot has a frontage of 100 ft. on El Molino and extends back 186 ft. The house is approached by a walk laid out on a sweeping curve encircling the tree which stands just in front of the porch. The porch and tree have been linked together in the ground plan. A cast cement balustrade following the contour of the circular porch extends down to the cement walk and encircles the tree. Inside the walk about the live oak is a space for floors and ferns.

On the ground floor is a living room with a circular bay window at the front. This room is 26 ft. long and 15 ft. wide with a 4-ft. recess on the left of the fireplace. A reception hall separates the living room from the dining room with cased openings between. The dining room is 13 x 17 ft. Access to the kitchen from the dining room is through a pass pantry. Back of the kitchen in a 1-story wing is a screened porch, maid's room and bath. On the second floor is the owner's bedroom with sleeping porch and bathroom attached, bedroom for the daughter, a guest room and a bath room.

The woodwork in the principal rooms and reception hall will be finished with an acid stain giving it a rich brown hue. The woodwork on the second floor will be finished with a light grey enamel. There will be beamed ceilings in both living and dining rooms and paneled wainscot in

the dining room. The fireplace in the living room will be faced with Batchelder tile. Oak floors will be laid in the principal rooms and maple on the second floor. The house will be heated by a hot air furnace and there will be an automatic water heater. All the windows are of the casement type and are fitted with disappearing screens.

The construction is frame with exterior plastered over metal lath and shingle roof. The porch columns and balustrades are cast cement and the porch and the pergola in the rear of the house are paved with brick. The work is being done by the day under the supervision of the owner. The cost will be approximately $8500.

* * *

Sawdust Concrete

SAWDUST concrete, meaning a concrete in which sawdust is used as part of the aggregate in mixing, is coming into use for certain purposes. Such concrete is of light weight and low tensile strength, but is possessed of some properties that render it quite desirable for indoor uses of some kinds. It is quite elastic, as compared with regular concrete.

Sawdust concrete was put to a novel use in the new Public Library building at Springfield, Mass. It was there used to form a base on which to lay the cork carpet to be employed in covering the floors. The chief object of employing the sawdust concrete was to secure a base into which nails could be driven and which, to a reasonable extent, would hold the nails.

According to a statement made by the company that did the work, it accomplished both purposes in an entirely satisfactory way. After making a number of experiments it was found that the best results were secured by employing a mixture consisting of one part of cement, two of sand and three-fourths of a part of sawdust. The thickness of the layer was one inch. Five thousand square feet of this mixture was laid and after four months of service the indications all are that the material is a complete success.

It is manifest that there is a wide field for the employment of sawdust concrete. Ordinary concrete has been extensively employed for flooring purposes, to which it is well adapted, save that its extreme solidity and lack of elasticity renders it unpleasant to walk upon. In places where the element of strength need not be considered this form of concrete can doubtless be used to great advantage.—American Contractor.

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The Building of Homes

Dwelling houses may be constructed of anything from paper to concrete. When built of paper they consist of ground plans, front elevations and mortgages. When they progress to something more substantial they do not resemble in any way the front elevation or the ground plan of the paper stage and are therefore disappointing in these particulars. The mortgage, however, always comes up to expectations. The houses of the elect may be distinguished by the butler's pantry, the middle classes by the reception hall and those of the hoi polloi by the parlor. Houses are useful to eat in, sleep in, bathe in, dress in, hide in, be seen in, die in, store junk in, insure and burn down. Dignity in houses is typified by a parking enclosed English country place, romance by a southern planter's mansion, poetry by a rose embowered cottage and humor by a modern flat.—Life.

Forty-Fifth Annual Convention of the American Institute of Architects

THE annual convention of the American Institute of Architects was held in Washington in December, among the California delegates being John Galen Howard of San Francisco and Alfred F. Rosenheim of Los Angeles. Officers for the ensuing year were elected as follows: Walter Cook, of New York, President; R. Clipston Sturgis, of Boston, First Vice-President; Frank C. Baldwin, of Detroit, Second Vice-President; Glenn Brown, of Washington, Secretary-Treasurer; Directors, Irving K. Pond, of Chicago, the Retiring President; John M. Donaldson, of Detroit; and Edward A. Crane, of Philadelphia; Fellows, Milton J. Dyer, of Cleveland; John Hall Rankin, of Philadelphia; Augustus N. Rantoul, of Boston; Lloyd Warren, of New York; H. B. Wheelock, of Chicago, and C. C. Zantzinger, of Philadelphia.

The selection of the place for the 1912 convention of the Institute was left to the board of directors, which will convene in January.

The convention closed with a banquet at the New Willard Hotel. The speakers included Senator George E. Chamberlain, of Oregon, on "The Relation of the Institute to Washington City"; Representative J. L. Slayden, of Texas, on "The Government's Relation to Art"; Representative W. Kent, of California, on "The Preservation of Natural Scenery," and Major W. V. Judson, engineer commissioner of the District of Columbia, on "The Future Development of Washington."

The convention adopted a resolution, presented by Carl F. Gould, of Seattle, directing the committee on city planning to make a study of the plans for municipal improvement which are under consideration by various cities in the United States. It will be the duty of the committee to report from time to time to the board of directors, so that the board may recommend or discourage the adoption of any of the plans and co-operate as it sees fit with the various municipalities having them under consideration.

The convention approved of the Institute's competition code by refusing to authorize the board of directors to consider a proposal of the New York chapter to give local sub-committees more latitude in applying the provisions of the code in competitions dealing with work that is purely of a commercial character.

Papers were read by H. B. Wheelock, on "Licensing Architects," and Lloyd Warren, on "Phases of Architectural Education."

Over 600 persons, including representatives of the cabinet, the supreme court, the diplomatic corps, Congress and the scientific and social life of Washington were present at the New National Museum to witness the presentation by the Institute of the gold medal to George B. Post, of New York, for fifty years of distinguished service in architecture.

President Taft, Ambassador Jusserand and Dr. Charles C. Walcott paid tribute to the work of Mr. Post and the services he has conferred upon humanity. At the conclusion of the addresses the recipient of the honor, which is conferred every three years by the organization, was presented with the medal by Irving K. Pond, President of the Institute, who presided. Mr. Post responded briefly.

An interesting feature of the banquet not scheduled and therefore the most enjoyed for its spontaniety was the presentation of a handsome cane, dubbed the "big stick," by C. Grant LaFarge, the President of the New York Chapter, to Walter Cook, the incoming President of the Institute. All the members of the New York Chapter present solemnly filed up and

shook hands with the recipient, who responded in a semi-serious vein, couched in the happy phraseology for which he is noted. The banquet throughout was an exemplification of the entente cordiale which exists between the profession and the Government.

As a whole, the convention was one of the most successful held by the Institute.

Included among the important matters affecting the welfare of the country at large was the directions given the Committee on Town Planning to make a study of the plans under consideration by various municipalities and to report the progress of their work from time to time to the board of directors, so that if possible, all these activities may be co-ordinated.

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Comparative Merits of Various Roofings

A RECENT writer on Architecture expresses the following opinion about roof covering:

"In reference to duration, slate or clay tile roofs will outlast all the other forms, and if desired, may be removed and used elsewhere, while gravel roofs or some of the best kinds of prepared roofing will be next in durability and will last from ten to twenty years. Any common form of sheet metal roofing will soon be destroyed by rust unless it is frequently painted, and will not generally last longer than from three to five years.

"In comparing the cost of roofings, it appears that some of the various prepared roofings are the cheapest. Other kinds, in order of cost are wood shingles, tar and gravel, corrugated iron, standing seams, sheet steel, metal shingles, slate, tin, corrugated asbestos board and tile.

"Iron or steel are unsuitable for roofing buildings, where destructive fumes or gases accumulate, as the thin metal is quickly destroyed by corrosion, and leaks develop. It is better on such buildings, if sheet metal is preferred, to have it lead coated.

"Metal roofs have the advantage of being lightning proof and, as the roof surface is smooth, they are more easily kept clean by the wind and rain. If it is desired to collect rain water from the roofs, water will be purer when taken from a clean metal roof than if drained from one of tar and gravel. Metal has the disadvantage of transmitting heat and cold, and metal roofed buildings are harder to heat in winter and in summer are uncomfortably warm. The objection to plank roofing from the standpoint of fire risk has probably been overestimated, for heavy plank supported on purloins 4 to 8 feet apart, will at the worst, burn very slowly, and will not collapse as soon as light steel framing, which warps and bends quickly under heat. Several disastrous fires have been traced directly to this cause.

"Slate has the disadvantage of cracking quickly under heat, should fire sparks get in between the joints and ignite the boards below. It appears, therefore, that the selection of a roof covering will depend upon the necessity for its being fireproof or not, the desired amount of durability, the first cost, pitch of the roof, and the amount of money the owners are willing to spend, either for the sake of appearance or permanence.

"Red slate or some of the many kinds of clay tile, especially red or green, add greatly to the appearance of roofs, though at extra cost, but this additional cost may easily be warranted on such buildings as pumping stations or power houses, located as they often are, in public places and open for the inspection of visitors."

Better Public Buildings Wanted in Los Angeles

By OCTAVIUS MORGAN, Architect.

AT this time our office buildings, commercial buildings, hotels and warehouses compare more than favorably with any city of the size in this country. When we say this we can say, in the world. As to our residences, we are leading the world in the diversified character and the comforts in the homes for the people for the great middle class. Our high cost dwellings that have been put up are exceedingly good in arrangement and design. Our architects in their residence work have considered the climate and surroundings.

Take the Huntington residence at Oak Knoll, Pasadena, the Merritt residence, Orange Grove avenue, Pasadena, and the Schlosser residence at Hollywood. All have the Italian feeling, with the terraces and sunken gardens.

Again the magnificent residences of English feeling, half timber and brick exterior, on West Adams street, Wilshire boulevard and on Oak Knoll and Orange Grove avenues, Pasadena; and the many other residences of diversified style not forgetting that colony of unique residences with the Japanese motif at the north end of Orange Grove avenue, together with our grand and comfortable club houses, show the tastes of the owners and the capacity of the architects, and outline what future prospect the architect will have here in this sort of thing.

But when we come to our public buildings, not yet have we erected anything monumental or noteworthy, hardly up to the wealth and requirements of a community of this size. Especially are we lacking in our school houses. We have studied in the past rather the utilitarian economical side to the exclusion of the monumental and architectural. No doubt the reason for this has been the rapid growth of the city and the lack of money to cover anything except the actual necessities of the case.

Los Angeles has set a high plane for its office buildings, commercial buildings and residences, but the time has now arrived when more attention should be paid to our public structures and this is the great field for the rising future architects of the city. But the architect is powerless to do better things without the endorsement of the public and the "powers that be." The wealth and prominence of this city demand that more attention should be paid to our public buildings.

When we look at our palatial hotels, our magnificent bank buildings, our great office buildings, we realize that Los Angeles and her architects have kept abreast with their opportunities and are creditable to all concerned, as the many strangers within our gates testify.

Without question Los Angeles is capable and will do as well with her public buildings as with her private buildings, producing something in the future commensurate with her wealth and dignity.

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"My husband is a great admirer of the clinging gown." "Indeed!" "He thinks the one I have now ought to cling to me for about four seasons.—Chicago News.

* * *

"Did you sell your vote?"

"Well, when a man gives you $10 'taint no more'n natural to like him, is it?"—Washington Star.

San Francisco Chapter Gives Advice on Competitions

THE following report has been made by the special committee on competitions of San Francisco Chapter, A. I. A., the committee being composed of William Mooser, Sylvain Schnaittacher, Herman Barth, Clinton Day and Geo. B. McDougall:

To the President and Members, San Francisco Chapter, A. I. A.:

The San Francisco Sub-Committee on Competitions begs leave to make its annual report as follows:

During the past year the Committee has been in communication with about ten different public bodies in connection with the proposed architectural competitions, but so far as we are informed, no competitions of importance have been instituted within the territory of this Chapter. We are happy in the belief, buttressed by our knowledge of the facts in some cases, including several county court houses, that this satisfying result is the logical outcome of the uniform advice of this Committee, supplemented evidently by that of the other members of the Chapter, that the competitive method for the selection of an architect is one that should be used only when absolutely necessary.

When the San Francisco Sub-Committee's labors in connection with the Institute's Circular of Advice and Code of Competitions were begun two years ago, it was not anticipated that the results in our territory indicated herein, would accrue in so comparatively short a time. As indicating the progress being made in this connection in other parts of the country, it is notable that the authorities at Washington, as the Chapter already knows, have selected Mr. Henry Bacon, Jr., of Boston, without competition, as architect for the two-million-dollar Lincoln Memorial.

This report, we believe, serves among other things to emphatically affirm the correctness of the Committee's position stated in a report to the Chapter made about eighteen months ago, that judging by the encouragement given the Committee by various public bodies, the abuses and unnecessary burdens heretofore a portion of architectural competitions, as well as of a variety of other matters architectural, were the result chiefly of the conduct, or misconduct, of the architects themselves; and that the public on its part, was more than willing to be guided as to correct courses of procedure in these matters by those who know.

We take this opportunity of again explaining briefly the course any member of this Chapter should pursue upon being invited to compete or receiving a competition program, as follows: Inform yourself whether the program has been approved and if it has not, take such action as will bring it before the proper Sub-Committee. It is not the policy of the Institute to send out notices to members informing them that a given competition has not received approval. On each member rests the direct duty of not taking part in any competition, the program of which has not received the Institute's approval. It is important that members should realize that the Institute is improving competition practice, where competition is unavoidable, not by attempting to control the action of those who are holding a competition, but by regulating the conduct of Chapter members. It is wise to advise the owner as to his course, but anything resembling dictation should be avoided with the greatest care.

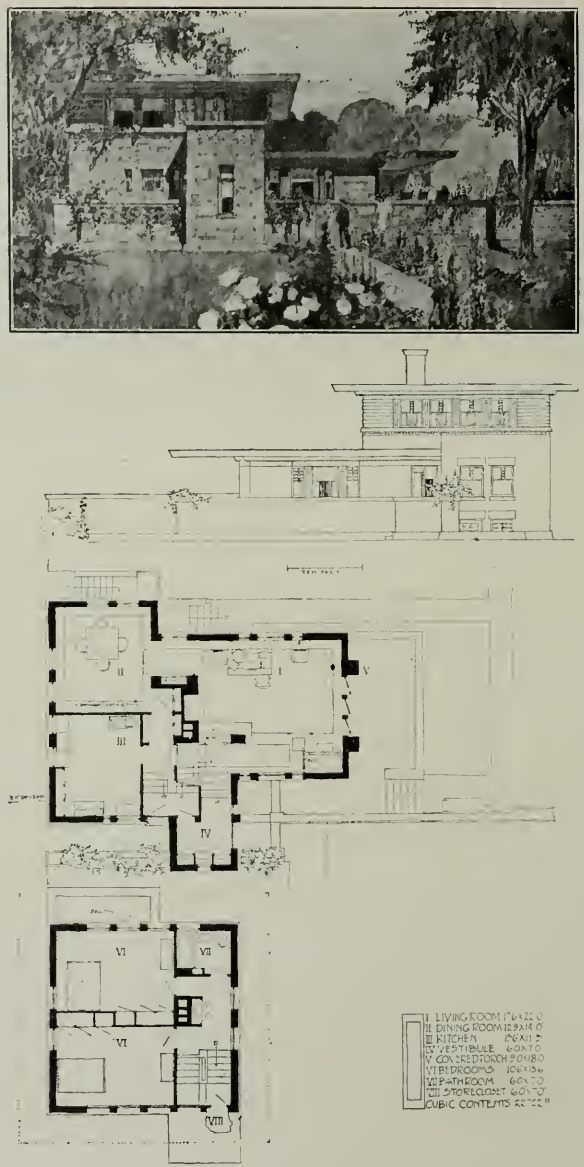
We now desire to congratulate the Chapter on the results thus far obtained in our territory and to cordially thank the members for the hearty co-operation they have given this Committee. We commend to each member, with all possible urgency, the desirability of continuance in the course which has already been attended with so large a degree of satisfaction.

Union Club, Victoria, B. C.
Loring P. Rixford, Architect

Concrete in Sea Water

THE deterioration of concrete in sea water has received much comment in Boston lately, due to statements by the State Board of Harbor and Land Commissioners. The subject is a very old one, and a marked difference of opinion regarding it exists between German engineers on the one hand, and English and American engineers on the other. There seems to be a rather prevalent opinion in Germany that it is necessary to employ special classes of cement for concrete harbor works. This opinion is based very largely on what may be called experimental investigations, although they have been conducted on a large scale. On the other hand, British engineers have used enormous quantities of concrete made with straight Portland cement, and the results of such work in service have not indicated the necessity of employing special material. The use of cement mortar for protecting the inside of the hulls of steel ships, where they are exposed to bilge water, is widely practiced; and it is generally understood that this protection is the best that can be applied, although the foulness of bilge water is traditional.

In the United States, certain investigations have been made by immersing concrete test specimens in salt water for various periods, and these have shown some results unfavorable to the concrete made and exposed in that fashion. On the other hand, concrete sea walls are in service in New York after many years' exposure, which are in admirable condition. It will be noticed that the Boston Harbor Works referred to have been mainly injured where alternately exposed to water and to air. In other words, the combined atmospheric and aqueous conditions are precisely those which have caused deterioration of concrete in structures exposed intermittently to fresh water during the winter. Frost rather than sea water has apparently been the destructive agent, and the remedy for this is dense concrete with good surface finish.—Engineering Record.



Perspective, Elevation, and Floor Plans of an Inexpensive Concrete Residence

An Inexpensive Concrete Design

THE competition recently held by the Cement Products Exhibition Company in the East was very successful in bringing out artistic designs for concrete residences. One of the designs submitted is thus described in Cement Age by the author, Mr. William Drummond of Chicago:

The competition required a design contemplating a very moderate expenditure and imposing some rather special conditions as compared with those typical of the low-priced house. Here then is the way I thought the conditions could best be satisfied.

A north front would seem to require a sunny exposure to the rear or south, with special provision for a sequestered garden plot which should be viewed from the principal rooms of the house and also from the porch. The garden could, it seems, be best suggested and at the same time protected by a wall across the front, and the porch to be of value in hot weather locally and for sunset views should be open to the southwest. The conditions imposed concerning construction seemed to require the utmost economy and simplicity were any aesthetic value to be expected from among those methods and plans possible within the expected expenditure.

Now rough, hollow blocks may be had of almost any particular shape from machines in use in almost any cement block factory and are the cheapest form in which concrete can be built into walls of any height. Also a reinforced concrete slab for floors and roof seems the only sensible and easily accomplished way in which floors and roof could be had by methods everywhere in use. So to conceive a building to meet the conditions, required but to devise an extremely economical plan as regards floor area and economical use of the wall material with enough show of daintiness and vigor in the putting together to escape the charge of "appearing cheap."

The living room is ample and, in effect, spacious, considering the size of the building, and with the porch and dining room commands a view of the garden as well as of the street, while the kitchen is at the front or north with entrance behind a screened wall. The stair hall is featured as a projection to the front and over-lapping the kitchen, as it were, supplies an entrance vestibule and storage space as well as a chamber for stairways.

The second story is imposed on the first as a square tower feature, combining with the chimney to give a solid, stocky and cosy effect. The floor slab and the first story roof slab is continuous, being at the same time extended as a porch roof, thus agreeably broadening and balancing the effect and serving a very useful purpose in the most simple manner.

The garden wall thickened and channeled out to receive the grace of flowers and vines, the flower beds at the walk side and the mystery of seclusion suggested by the glimpses from the garden wall are sufficient in their provisions for nature's work to develop when secured a cozy atmosphere good enough for any man's home.

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Teacher: What was the Sherman Act?
Bright Pupil: Marching through Georgia.—Pathfinder.

* * *

She—You say your sister's wedding went off without a hitch? How nice! He—Yes, the fellow she was going to marry didn't show up

Court Sustains the Illinois Architects' License Law

PACIFIC Coast architects will doubtless be interested in a recent decision of the supreme court of Illinois which affirms the constitutionality of the Architects' State License Law. This law operates very similar to the California measure over which there have been a number of test cases in the past. The decision is as follows:

The decision was handed down by Justice Cartwright October 3, by the supreme court, at Springfield, including Hon. Orrin N. Carter, chief justice; Hon. James H. Cartwright, Hon. John P. Hand, Hon. William M. Farmer, Hon. Alonzo K. Vickers, Hon. Frank K. Dunn and Hon. George A. Cooke. The opinion of the court was filed and entered of record as the People, ex rel, Theodore F. Laist, appellant, vs. Elton Lower, et al., appellees, on a writ of error from the circuit court of Cook county, Mr. Justice Cartwright delivered the opinion of the court.

On June 15, 1910, there was a vacancy in the office of city architect of the city of Chicago and the commissioner of the department of public works had made a requisition on the civil service commission for eligibles to fill the vacancy. On June 21, 1910, an examination was held by the commission and Theodore F. Laist received the highest rating, and on August 10, 1910, was certified to the department of public works in accordance with the provisions of an act to regulate the civil service of cities. Afterward the civil service commission revoked the certificate because Laist was not a licensed architect under the requirements of an act entitled, "An act to provide for the licensing of architects and regulating the practice of architecture as a profesion," in force July 1, 1897. (Laws of 1897, p. 81.) Laist reported for duty at the department of public works and claimed a right to the office of city architect, but the commission refused to allow him to assume the office because the certificate of the civil service commission had been revoked. On September 16, 1910, the state board of examiners of architects delivered to Laist a certificate that he had passed the special board room examination for a license to practice the profession of architecture, and that upon payment to the secretary of the board of the license fee of $25 a license would be issued to him. The certificate stated that it did not authorize him to practice the profession of architecture or to use a seal, and that such authority would only be given upon receipt of the license fee. Laist, as relator, filed his petition, in the name of the people, in the circuit court of Cook county, praying for a writ of mandamus directing the civil service commission forthwith to certify him for appointment as city architect. He set forth the facts above stated in his amended petition, and they were admitted by the demurrer of the defendants. The circuit court sustained the demurrer and dismissed the petition, and the relator was allowed an appeal to this court on the ground that the validity of the act to provide for the licensing of architects is involved.

One ground for claiming that the court erred in sustaining the demurrer is, that the appointment, of the relator as city architect was complete when he was certified to the commissioner of the department of public works, and as he was not removable by the appointing power, his appointment was irrevocable, and could not be annulled by revoking the certificate. It is true that an appointment is complete when the last act required of the appointing power has been performed, and the authority to make the appointment has then been exhausted. In such a case the appointing power cannot revoke the appointment, and the one appointed can only be removed by lawful authority. In this case, however, the relator was not appointed

city architect and the civil service commission made no attempt to appoint him to that position. The commission has no power to appoint to any office or position, but the power to appoint is in the head of the department or office in which a position classified under the civil service act is to be filled. There was no attempted revocation of an appointment since none had been made, but when it was learned that the certificate had been improvidently made and the relator was lacking in a necessary qualification for appointment, it was within the power of the civil service commission to correct its mistake by withdrawing the certificate.

The statute prohibits any person from practising architecture in this state without a license, but it is contended that the act is in violation of section 2 of article 2 of the constitution, which provides that no person shall be deprived of life, liberty or property without due process of law. That provision of the bill of rights secures the citizen against laws which select particular individuals of a class and impose upon them special obligations and burdens from which others of the same class are exempt, and many cases, such as Gillespie vs. People, 188 Ill. 176, are cited in support of the argument that the act in question is void. The particular section which it is claimed imposes upon the relator the burden of obtaining a license and paying a fee therefor while others who are in the same class and situation are exempt from the burden, is section 9, which defines the persons who shall be regarded as architects. It provides that any person who shall be engaged in the planning or supervision of the erection, enlargement or alteration of buildings for others and to be constructed by other persons than himself shall be regarded as an architect, but nothing contained in the act shall be construed to prevent any person, mechanic or builder from making plans and specifications for or supervising the erection, enlargement or alteration of any building that is to be constructed by himself or his employes. The section properly defines the occupation of an architect. He is the one who makes it his occupation to form or devise plans and designs and to draw up specifications for buildings or structures and to superintend their construction. (Webster's Int. Dict. Standard Dict.) The word "builder" is selected by counsel in making the argument as representing an unlawful classification; but a builder is one whose occupation is to build or erect buildings and structures, and he is not in the same class as an architect, who makes plans and specifications for others. The act uses the comprehensive term "any person," which includes mechanics, builders and all others constructing buildings, either themselves or by their employes. Any person erecting a building may employ an architect if he sees fit, or make his own plans and specifications, and he does not become an architect by planning the building which he erects. There is no selection of persons belonging to the same class, in violation of the provision of the constitution. For the same reason the act is not in violation of the fourteenth amendment to the constitution of the United States.

The judgment of the circuit court is affirmed.

Judgment affirmed.

* * *

Perhaps He'd Like To

A Portland architect was asked by the wife of a client why he had cut dimensions in half on one of the bedrooms. He replied that it was by her husband's orders.

"The mean thing!" she exclaimed. "That is mother's room. Wonder he don't try and crowd her out altogether."

Paint Economy

By G. B. HECKEL

SPARE the cent and lose the dollar. If there is any incident of daily life to which this saying most forcibly applies, it is to the use of paint. Paint is, of course, a beautifier, and as such is entitled to consideration. It is also a sanitary agent, and as such is entitled to serious attention. But, above all, it is a preservative, and as such is an investment which none but the improvident will neglect.

"Good paint costs nothing," say the long-headed Dutch in one of the nuggets of every-day wisdom. It costs nothing because the values saved by it are out of all proportion to the price paid for it.

Structural materials, whether wood or metal, unless protected from the elements, will quickly decay. Wood will rot, metals will rust.

Properly protected by paint, renewed as its efficiency declines, these materials will last indefinitely. The quality of lumber is steadily deteriorating, and the price, owing to the exhaustion of the supply, is steadily rising. If all the wood now in structures were to be suddenly destroyed, it could not be replaced at any price; if it is gradually destroyed, because of indifference, the calamity will come as inevitably, even though deferred.

Tons of steel are daily dissipated in irrevocable dust by the grinding of car wheels and the friction of machinery. This waste is, to a great extent, unavoidable. But when compared to the loss through rust and corrosion it is a trifle. Rust and corrosion, like the decay of lumber, can be prevented by the proper and sufficient use of paint.

A recent survey of the structures of the country capable of preservation by means of paint shows by comparison with the actual annual consumption of paint that "the country is only 25 per cent painted"—in other words, that for the proper protection and preservation of these buildings, in which a large proportion of our national capital is invested, about four times as much paint as is now used would be needed.

The statement is astounding, and the short-sightedness it reveals almost incredible. Such wasteful economy is on a parallel with the action of the man who hides his cash in the kitchen stove, forgets it and kindles a fire in the stove.

Good paint is today the cheapest commodity of daily life. While there has been some advance in its price, owing to increases in the cost of raw materials and the marked improvement in quality following systematic tests on a large scale, lumber and steel have advanced several hundred per cent, and other articles of daily use correspondingly. Therefore, compared with the materials paint is used to conserve, it is actually cheaper at present prices than ever before.

Fire insurance is commonly regarded as a necessary precaution against loss. The argument for paint is exactly the same as for insurance, with this distinction—that fire is accidental and occasional and is not prevented by insurance, while decay is inevitable in the absence of paint, but is absolutely prevented by its use.

The only difference between fire and decay or rust is in the rapidity of the process. Fundamentally they are the same.

Now, if it were possible, at a low cost, to obtain a form of insurance that would not only reimburse us for loss by fire, but would prevent a fire, who would be without that kind of insurance? Paint is a form of insurance that absolutely prevents the slow types of burning known as decay and rust. Why, then, is the perishable property of the country only 25 per cent protected by this most efficient of all forms of insurance? The only possible reason is that property owners do not realize the facts.—Paint and Varnish Record.

Getting Away from the "Chandelier" in Fixture Design

From the Illuminating Engineer

CUSTOM lives long and dies hard; witness the two buttons that still persist on the tails of the frock coat. The use of these originated in the swashbuckling days when a sword was an essential part of a gentleman's dress. In order that the weapon might be instantly unsheathed, for which the demand might arise at any time, the front portions of the coat skirt were turned back and buttoned in the rear. The sword as a decorative or useful adjunct to civilian attire has long since passed away, leaving only these buttons as an unrecognized relic of a long vanished custom.

For ages the candle was the light-source of gentility; the masses had to be satisfied with rush-lights and pine knots. The chandelier, or candle-holder, was an object which received the attention of the royal architect and state decorator, and was developed into a thing of exquisite beauty; thus it has exemplified the truth that "a thing of beauty is a joy forever," for not even the complete change in social and political institutions nor the extinction of the candle as a practical illuminant have been sufficient to overthrow the supremacy of the chandelier as a lighting fixture. When illuminating gas came in we were served with gas "candles," and when the electric light made its appearance the electric "candle" immediately came into being.

Fig. 2.—A Study in Curves

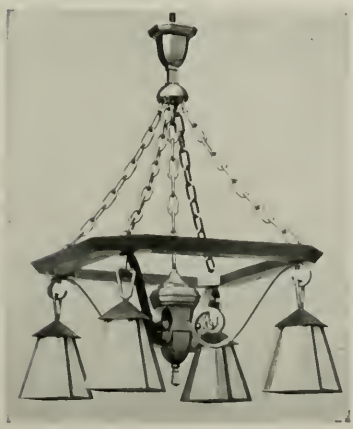


Fig. 1.—Showing Arts-and-Crafts Influence

A curious feature of the remarkable persistence of custom in this instance is the fact that it has been most in evidence in America, the one country supposed to be least influenced by precedent and custom. It is only within the past few years that any considerable progress has been made toward getting

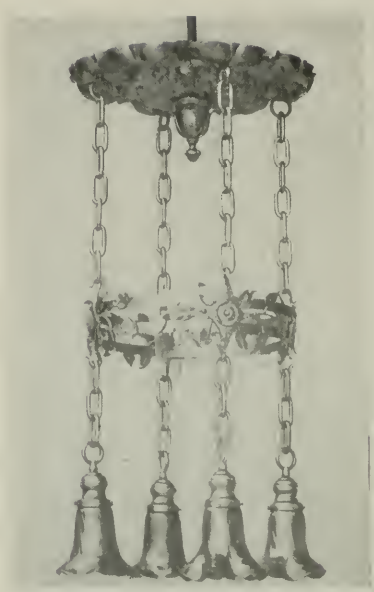


Fig. 3.—Successful Modification of the "Shower"

away from the candle-holder idea in lighting fixtures. The infinite possibilities of the electric light for variety and originality of treatment have been scarcely touched upon. The tendency to break away from the traditional chandelier is undoubtedly increasing, and is destined to become a leading force in the design of lighting fixtures.

As might be expected, the Western manufacturers have shown the greater tendency in this direction. A few recent examples are given herewith. The essential feature in all of these is the absence of the rigid central stem, or body, and the substitution of chain support and construction which plainly declares electricity as the source of light.

In Fig. 1 the mechanical principal of supporting the lamps and shades by chains held apart by a spreading device is consistently carried out, with an excellent sense of proportion. The design is essentially angular, but is relieved by a judicious use of curves. The artistic motive is modern, and would harmonize with Mission or Arts-and-Crafts schools of decoration and architecture.

Fig. 2 involves the same basic mechanical principle, but with a different treatment of the spreading device, in this case following the Art Nouveau principle of decoration. Harmony of line and simple curves are depended upon for artistic effect, superficial decoration being used to a slight extent.

In Fig. 3 the spreading of the flexible supports is accomplished by the use of a ceiling placque. The monotony of a number of simple pendant chains is relieved by the use of a decorative band midway be-

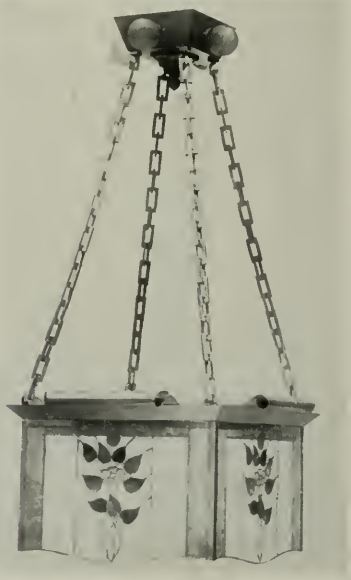


Fig. 4.—For the Morris Room

Fig. 5.—A Combination of Direct and Indirect Lighting

tween lamp and ceiling. The treatment is distinctly Art Nouveau in motive, leaves in their natural form being produced in wrought metal effect, while the shades, both in shape and color, closely simulate flowers. The fixture is essentially decorative and as such would be suitable in either a room in which only a moderate intensity of illumination is desirable, or where supplementary light-sources, such as table lamps, would be used. The finish would naturally correspond with the wrought metal effect, rich bronze having the preference.

Fig. 4 is a design which would particularly appeal to a new school of architecture which differs somewhat from the Arts and Crafts. It is perhaps nearer the Morris ideas of decorative art. The illustration does not indicate the interior construction of the art glass shade. Assuming that this is a large translucent reflector equipped with a single Mazda or tungsten lamp the fixture is a highly efficient lighting unit, as well as distinctly original and pleasing in its artistic design. The lamps on the ceiling support could be omitted without detriment to the general usefulness or appearance of the fixture.

Fig. 5 is worthy of notice from the illuminating engineering viewpoint, as well as the artistic side. It is an interesting combination of semi-indirect and direct lighting. The former is accomplished by the use of the Alba glass hemisphere, which would deflect a considerable light to the ceiling, while transmitting the balance as direct illumination, while the pendant reflectors constitute a highly efficient direct lighting unit. The composition is excellent, both the curves and the weight being in perfect harmony.

Fig. 6 is a ceiling fixture, utilizing the metal ribbon principle which was noted in a previous article. The essentially angular

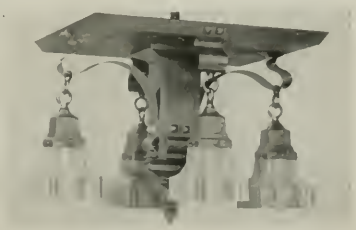


Fig. 6.—Ceiling Plaque, with Ribbon Effect

Fig. 7.—A Semi-Indirect Fixture

construction is relieved by the graceful curves of the supports and set off by the rivet heads. The fixture is reasonably efficient as an illuminating device and very modest in price, and would acceptably fill many requirements in the cottage or bungalow.

Fig. 7 is chiefly interesting from the illumination standpoint, representing an effort to combine both the direct and indirect methods of illumination. The design is what would be best designated as modern. The fixture could be made an efficient indirect lighting unit by the use of a large prismatic reflector and tungsten lamp inside the art glass construction. The transmitted light would be sufficient to bring out the color effect of the leaded glass.

Fig. 8 shows a successful modification of the popular "shower" type of fixture, by the use of a band of metal to relieve the severity of of the chains.

Fig. 8.—A Classical Treotment of the Shower

Moral—Use Concrete Piles

The old adage of an ounce of prevention being worth a pound of cure does not hold true in the case of protecting wooden piles from the home-making propensities of teredos and other marine borers. The various preservative treatments merely postpone the day of tendability. Recent experiments at Seattle have demonstrated that an electric current of high amperage and low voltage will poison these pests by liberating large volumes of chlorine as the result of electrolysis.—Journal of Electricity, Power and Gas.

The Varied Use of Bond in Brickwork

MUCH attention is now being given by architects to brickwork, as is noticeable in nearly every new building of architectural merit. Bricks with texture and fine color tones and bonds that make a pretty pattern in the wall are employed. Less and less is being seen in new work of the old-style "running bond," or the representatives of it that house painters used to block out with red and white paint.

The way in which bricks are laid, or the bond, is an important consideration. In House and Garden of recent date Harold D. Eberlien describes several of the bonds employed. He says the most common bond; in fact, almost the only one employed during a great part of the nineteenth century, is the running bond, in which all the courses are composed of "stretchers," that is to say, bricks laid lengthwise, the only "headers" or endwise bricks visible being at frequent intervals when their use is made obligatory by the local building laws to tie the face-wall to the backing. Each course breaks joints vertically with the courses immediately above and below. Running bond is perhaps the simplest and certainly the least interesting and artistic way of laying brick and has little to commend it except considerations of economy when a misguided desire for smug precision outwardly prompts the use of a pressed brick facing.

The Flemish bond, in which every course consists of alternate headers and stretchers, is, after the running bond, the one we most commonly meet with, having been generally used in our brick buildings of colonial date, in which the black header and red stretcher effect is so often noticeable. Flemish bond is constructionally honest, artistic and satisfying and its almost universal employment in modern building of colonial style cannot be too strongly commended.

The double-stretcher Flemish bond which, as its name denotes, consists of two stretchers together, followed by a single header in all courses, the headers being laid above the joints between the two stretchers in the course next below is coming more and more into vogue in America and has been used in some of our largest buildings with signal success. For the vertical joints between the contiguous stretchers, mortar colored to exactly match the bricks is often used, thus making a blind joint and giving the effect of one double-length stretcher. The use of double-stretcher Flemish bond sets a big, broad scale and can be employed to advantage in large wall surfaces, particularly where it is desired to take off somewhat from the appearance of height, as the strongly marked horizontal lines have that effect. This feature can be further emphasized by slightly increasing the thickness of the horizontal mortar joints.

English bond and Dutch cross bond, like both the single-stretcher and double-stretcher Flemish bond, are replete with artistic feeling and deserve to be far more widely known and used than they now are in America. Not only are they essentially artistic, but they are strong and honest in structure. Both English bond and Dutch cross bond have alternate courses, the one wholly of stretchers and the next wholly of headers, but in the English bond the stretchers of all the courses come directly above each other, while, in the Dutch cross bond the stretchers of the first and fifth courses break joints with the stretchers of the third and seventh courses respectively, and thus throughout, giving a half-invisible, diagonally diapered appearance if the mortar joints and the hue of the bricks be judiciously arranged. If one chooses to put it so, running bond might be termed a degenerate form of Dutch cross bond with all the headers left out. Take out the alternate courses of headers and bring the course of stretchers together and you have running bond. One is tempted to remark that this is only an example of its being but a step from the sublime to the ridiculous.

The bonds hitherto mentioned are the most usual kinds, although there are others and one also meets with special adaptations of recognized types, but it is quite sufficient for general purposes to remember the five enumerated. In fact, many people, who are supposed to have some knowledge of such matters, have difficulty in keeping the differences clear.

* * *

Cement for Architectural Ornaments

ASK a dozen intelligent men and women what they admire most in a house and what answers will you get? Probably nine out of the twelve will specify some ornamental detail rather than anything more directly a function of the main design.

A carved screen, a handsome stairway, is easier to understand, says Samuel Swift, easier to remember, than the subtle beauty of a well-proportioned room or the touch of genius in the arrangement of door and window openings in a facade. This popular preference for decoration over structure is venerable, and it extends to all the arts. And, as in architecture a very large influence is wielded by the non-professional client, any new thing extending the range or lessening the cost of decorative effects must be of general and not merely special interest.

Cement, and its derivative, concrete, are precisely such new factors in architectural ornament. So recent, indeed, has been the wholesale adoption of these materials for general building purposes, that architects have often found themselves, willy-nilly, turned into contracting engineers to meet the new demands. For them, the smaller uses of cement have had to wait until experience could be gained in the larger operations. Walls and floors, columns, beams and stairways have greatly occupied designers and builders. Yet there has been, already, successful adornment of the inside and outside of buildings with cement products. Mantels, fireplaces, chimneys, friezes, balustrades, doorways, mouldings, and many other details have been carried out in these substances, and their use for such purposes is quickly spreading. In and about New York, in New England, in Pennsylvania, and especially in the Middle West, new applications of them are growing rapidly more numerous.

The use of cement or concrete for architectural ornament says House Beautiful, means a saving of forty to sixty per cent of the cost of limestone and of fifty to seventy-five per cent of the cost of marble. If a fixed sum be available, a good deal more ornamenting can be provided in cement than in stone or marble. Often, the lower expense of cement will permit the adornment of buildings which the owners could not otherwise afford to decorate at all.

* * *

American Institute to Inquire into the Portland Auditorium Competition

Architect B. J. S. Cahill's criticism of the Portland Auditorium competition in the December Architect and Engineer has met with the most cordial approbation by a large number of leading architects in the east as well as in the west. Mr. Cahill's criticism may be accepted as mild when compared with the sentiments expressed by some of his brother critics, in personal letters addressed to this magazine. These letters will be printed in the February number of the Architect and Engineer. It will undoubtedly interest the profession to know that the Portland matter is to be taken up by the Competitions Committee of the American Institute, a letter imparting this information having come to us from President Walter Cook.

With the Contractors

Organized Labor

By WM. E. HAGUE.

THE recent confession of the McNamara brothers has, without doubt, set the whole United States thinking about the great labor problem. It is to be earnestly hoped that every effort will be made to convict those under whose instructions the McNamara brothers were acting. There can be little doubt that the leaders of the International Association of Bridge and Structural Iron Workers were fully cognizant of what was going on, for the many dynamiting operations carried on by this delectable duo must certainly have cost their organization many thousands of dollars, and the disbursing of the requisite funds must certainly have been approved by those at the head of the organization.

This whole situation, before the atmosphere is finally cleared, will no doubt lead to many discoveries, and the result would seem to point to action on the part of the rank and file of the unions, such as the recent stand taken by some 50,000 union mechanics of Chicago, who recently refused to be dictated to by the Building Trades' Council of that city, and have reorganized another body under the name of the "Associated Building Trades." Everything points to the final result of a great awakening on the part of the labor unions. For years past the men at the head of the different building trades' councils of the cities of the country—the American Federation of Labor, etc.—have been run by an unscrupulous bunch of politicians, who have stopped at nothing, and who have never been called upon for the proper accounting of the vast funds entrusted to their charge.

Some months ago we read of several building trades' councils in the different cities of this State demanding of the state organization an accounting of its funds. Now we read that in the instance of the Sacramento unions the mechanics of that city alone contributed $16,000 for the McNamara defense fund, and they are demanding to know what has become of it. They are certainly entitled to know how it has been spent, and the country at large is lawfully entitled to the same information.

A very happy solution of the whole situation would be a law compelling the unions to incorporate. Such a law if it can be passed would bring the unions to a realization of their responsibilities and place them upon a business basis; but so long as a few unscrupulous leaders have the handling of the funds and are not responsible to the State or the government, the same conditions which have existed in the past will continue to exist, unless the unions themselves reorganize on proper business lines. Such action, however, is not likely, as from past experience we know that the rank and file of the average union on any important issue are never allowed a square ballot.

Better conditions for all who have anything to do with the building industries of Chicago appear to be in sight through the large representation of union labor in the reorganized Associated Building Trades. Some 50,000 workmen in 16 unions have joined this new body, and other unions with about 20,000 members are said either to support it or remain neutral. The revolt against the Building Trades' Council of Chicago is a revolt to leadership methods and actions that have offended right minded men. The worst enemy of union labor is the reckless or dishonest or unfit leader. It is to get rid of such leaders that the new organization has been formed.

If we have in San Francisco such leaders as they have had in Chicago the sooner we know it, the sooner the unions know it, and the sooner they are removed from office the better the chance which the unions will have in this city in the future. There is bound to be a day of awakening on the part of the thousands of union labor men in this city, and there are thousands of former good staunch union men in this city who would be only too glad today of an opportunity to shake off the shakles of a combination which in recent years has in many instances not served the best business interests of those whom the Labor Council and the Building Trades' Council represent.

* * *

An Interesting Article.

In a recent number of the "Saturday Evening Post" appears an article entitled "How to Beat the Building Game," written by Mr. B. A. Howes, who is evidently familiar with all the evils which beset the building business. His conclusions are well fitted to "point a moral and adorn a tale." All architects, contractors and owners should make it their business to read this article. It is readable and instructive, and the point which is of particular interest to them is the fact that the author points out in a logical way that the best method for an architect to get the most value for his owner's money is by selecting some good, responsible general contractor and awarding him the entire contract. We quote the two following paragraphs as being of particular interest:

"Some architects occasionally recommend the plan of several separate contracts, let on a competitive basis, for carpenter work, masonry, plastering, painting, and so on, with the idea of saving the general contractor's profit on these contracts; but this expectation is mostly illusory. In the first place, this method of building requires a highly competent and well-salaried clerk-of-the-works, who must carefully watch all operations; and the continual disputes as to responsibility and mutual interference between different contractors, with the consequent loss of time, usually eat up the rest of the saving.

"The only way to beat the building game is, first, to find an architect who has some strength of character and business sense, and a contractor who has a reputation for good work; and then—not to corrupt the contractor by demanding that he forego his profit in too low a bid or overstrain the architect by thus forcing him to play policeman. The whole matter reduces itself to the willingness on the part of the owner to make a rigid and searching investigation into the contractor's record and character—and his pecuniary circumstances are not less important. The architect isn't going to do it; he is going to shop round indefinitely to save the owner's money for the small fee he can charge—architects are greatly underpaid if they do what the fond owner thinks they ought to do. His duty at this stage is done if he weeds out the bunch of contractors. And, in spite of the fact that there are no corrupt architects, their interest in the choice of a contractor is not always precisely identical with the owner's interest."

Hints on Estimating for the Building Contractor.

Don't forget that rates of wages are lowest in dull times and in winter, and highest in boom times and in summer.

In estimating the cost of transportation give special attention to the character of available roads, the direction of the proposed traffic, and the time of year.

Insurance against accidents depends upon the risk, not to the plant, but to the men.

After making an estimate in detail, lay it aside a day or two if possible, forget the figures and then go over them again critically.

If some one else is going to carry on the work, take his personality into account in making an estimate of how much his work is going to cost.

Check up an estimate against average contract prices, selecting particularly contracts where the conditions are well known, and selecting the contract bids from firms of experience in the line of work in question.

Check over the bidding sheet to see that it compares with the estimate.

A long and big job can be estimated on more safely than a short and small one, since the accidental conditions on big work are more likely to balance themselves.

The worst estimate made upon even assumed data is generally a good deal better than guess.

To estimate the quantity of sheeting or of shiplap, calculate the exact surface to be covered, deducting openings; then add the following percentage:

For floors	1/7, or 15 p. c.	1/6, or 17 p. c.
For sidewalks	1/6, or 17 p. c.	1/5, or 20 p. c.
For roofs	1/5, or 20 p. c.	1/4, or 25 p. c.

The cost of materials will vary from year to year. A study should be made of the characteristic fluctuations in prices, when figuring closely, in order that proper prices of materials can be determined for some time in advance.

* * *

Contractors' Banquet

The first annual banquet of the General Contractors' Association of San Francisco was held on the evening of November 23, 1911 at the St. Germain restaurant, and was a notable event in the history of the association. It was in the nature of a jollification, celebrating the definite leasing and securing of quarters for the organization in the new nine-story building to be erected at New Montgomery and Jessie streets. The banquet was all that could be desired; the menu was beyond reproach, the musical selections were supremely good and the speeches par excellence. The committee having the matter in charge certainly arranged and carried out an interesting evening's entertainment. President Chas. A. Day addressed the association on the great future before it; Mr. F. H. Masow on the new headquarters; Mr. A. H. Bergstrom on the building of a world's fair; Mr. P. J. Lynch on the benefits of organization; Mr. Chas. Wright on the affiliated bodies; Mr. J. J. Phillips on the good work accomplished by the association to date.

About 120 members and guests were present, and nearly all stayed until the conclusion of the last speech, which speaks well for the ability of the spell-binders who were holding forth. Every listener was interested.

State will Profit by New Boiler Bids

THAT State Engineer Ellery was justified in rejecting the first bids for boilers, boiler-room auxiliaries, and piping for the power-plant in connection with the heating system of the Stockton State Hospital (despite the arguments against it—as explained in the December issue of this magazine), and that he will save the State money by having done so, has been confirmed by the new bids received and opened December 23d by the State Engineering Department.

Although the specifications for the second bids were changed in some particulars, including the omission of the concrete foundation, the wrecking of the old boilers, and the addition of some other features, the entire gross reduction in money over the former specifications would not entail more than $650.

Separate bids were called for on boilers, and auxiliary equipment, in order to allow the State to purchase the boilers or auxiliaries from separate firms, and at separate times if they should deem it necessary, and without exception all the bids were considerably lower than those submitted the first time. Several firms failed to bid on the auxiliaries, while one concern failed to segregate its bid. Basing figures on the complete job, the lowest price submitted was that of the Central California Construction Company for three Casey Hedges boilers and auxiliary equipment at $16,200, compared with the lowest figure for the complete job at the first bidding of $20,473, by the United Iron Works of Oakland, using three Heine boilers. Despite the assertions of Chas. C. Moore & Co. before the State Board of Control, that it would be impossible to purchase the Stirling boilers for less than their offer, the Pacific Fire Extinguisher Company bid $19,125 for the complete job, using either three Stirling (handled exclusively by Chas. C. Moore & Co.) or Dorward boilers, showing a reduction of nearly $2000 over the former bid of the Chas. C. Moore & Co., for the complete job, of $21,000. It has been authentically learned by the State Engineering Department that the price made by the Chas. C. Moore & Co. to the Pacific Fire Extinguisher Company—on which the above mentioned bid was based—was $6900 for the Stirling boilers erected, and $1675 for the brick work, making a total of $8575, which is $1525 lower than their former bid to the State of $10,100. Chas. C. Moore & Co. did not bid on the auxiliary equipment, and their boiler bid showed a nominal reduction of $31. The bid of the Central California Construction Company for three Keeler boilers and equipment at $16,650, showed a reduction on the same boilers and equipment, as offered by the Frederick C. Roberts Company at the first bidding, of $7100. The bid of the United Iron Works of Oakland, showed a reduction of $1551 for the complete work, over its former bid; while the bids of both the California Hydraulic Engineering and Supply Company, and the Pacific Fire Extinguisher Company, on the complete job, showed reductions of over $3000 in both cases. The bid of the Union Iron Works was also lower than in its former price.

The Pacific Fire Extinguisher Company bid $19,125 on the complete job, failing to segregate their bid. The Keystone Boiler Works (agents for the Parker boiler) and the Dorward Engineering Company, were new bidders on the boilers alone, and C. F. Braun & Co. and F. P. Walsh were new bidders on the auxiliary equipment.

* * *

Wasting Money

A Seattle architect instructed to draw plans for a building for the Blind, suggested that windows were a needless expense and might be omitted.

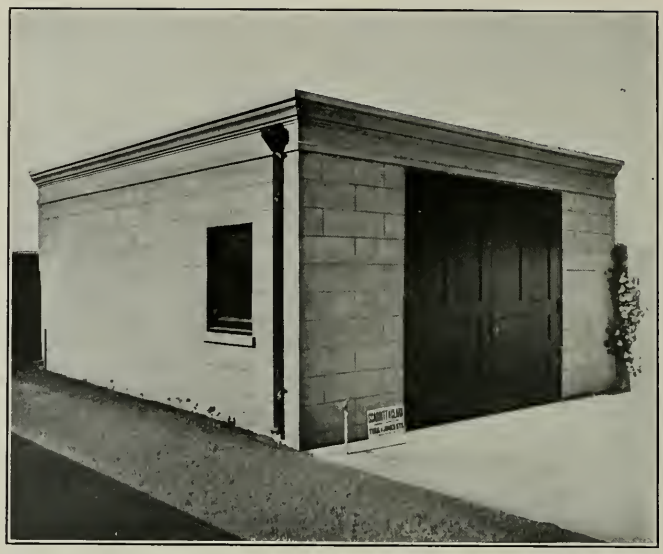
(Fig. 1.) Concrete Garage for Mr. L. E. Hanchett, San Francisco

Two Private Garages of Reinforced Concrete

THE accompanying photographs show two reinforced concrete garages recently erected in San Francisco. They are fair examples of the class of buildings of this type being put up by owners of automobiles in the rear of their city residences.

Figure 1 shows the garage of L. E. Hanchett, the railroad promoter, which was erected at a cost of about $3500. It is more elaborate than the average private garage, both in structural design and equipment. It is fireproof throughout. Foundations, walls and roof are of reinforced concrete, while the doors and windows are metal with wire glass panes. The house is equipped with electric lights, and is piped for hot and cold water. It has a Bowser gasoline tank and a patent winch, made by the Butte Engineering Company, and used to lift the engine from the body of the machine for cleaning or repairing the sensitive parts. The garage is large enough for two machines, and it also has a small workshop in the rear.

The building shown in Figure 2 was designed by Architect J. Eugene Freeman, and was erected for Joseph Peltier at a cost of about $1600. It is of reinforced concrete construction, 22 by 44 feet, and equipped with electric lights and turntable. The walls are damp proofed; the floor is cement, and the roof tar and gravel.



(Fig. 2.) Concrete Garage for Mr. Joseph Peltier, San Francisco

Razing a Reinforced Concrete Building

THE onward march of progress falters at no obstacles, however difficult may be their subjugation, and while to the layman it may seem poor economy to demolish imposing buildings to make way for the erection of larger, taller and more costly structures, yet this course is frequently found necessary in connection with the commercial development of the larger cities of the country. This is especially true of the metropolis of the East, where many a costly building has been torn down to make way for something more imposing, and the work has embraced not only buildings erected many years ago, but also several which have stood for only a comparatively short time. One of the more notable instances of the latter kind is that of the twenty-story steel skeleton frame skyscraper at Wall and Nassau streets, to make room for a still more lofty and larger office structure. There are, however, comparatively few instances of the razing of reinforced concrete buildings, but a striking example of work of this kind is found in the recent demolition in a Southern City of a seven-story structure which had been standing less than ten years to make room for the erection upon its site of a sixteen-story building.

The method of procedure in demolishing this reinforced concrete building is of unusual interest and we take pleasure in presenting the following particulars: Some of the larger columns and girders in the frame-work of the concrete building were as large as 1 ton per lineal foot. They were 2 feet in thickness and 5 feet in depth, one of the main girders supporting the upper framework being 49 feet in length. It was reinforced with 43 steel rods extending entirely through the concrete. There were 26 rods which were 2 inches in diameter and 16 were 2½ inches in diameter. In some parts the thickness of the reinforcement was as large as 3 inches.

The floors were a layer of concrete 2 inches thick set into a mesh of ¼-inch steel wire, while the stairways were molded of concrete blocks.

The contract called for the demolition of the building in ninety days, and the system employed was notable for its time and the labor-saving features. Beginning at the top the roof members were cut and burned into sections that could be readily lifted by a boom derrick and lowered by block and tackle to wagons in the street to be hauled away. Much of the concrete work averaged 7 tons in weight for a length of 6 feet, and the majority of the posts, girders and other material had to be separated into this size.

The first process was to cut through the concrete. This was done by compressed air hand-drills operating at a pressure of 125 pounds per square inch. The steel point bores into the material, making an opening varying from 6 inches to 1 foot in width, so that very little debris results. The tool is guided between the steel rods, removing all the concrete, until they are completely exposed in the concrete fissure.

The steel was not cut by saw or chisel, but severed by corroding heat, a Linde compressed-air coal-gas burner being used. Portable reservoirs are filled with gas at a pressure of 1800 pounds. The burner is connected with tubes for conveying the gas, also oxygen. The flame composed of these elements develops a heat of fully 2000 degrees. The burner is pressed against the rod until the latter becomes red hot. Then the oxygen is applied to the metal and corrodes it, so that it becomes honeycombed. As the flame is small in dimensions, less than a half-inch of the metal is removed in severing the rod. How rapidly the work was done appears from tests made on the Baltimore building, which proved that one man with the burner can do as much as eleven men with saw or chisel in the same time.

In removing the concrete sections two boom derricks were used. The boom of one was 60 feet long, and from it extended a block and tackle. When a piece of girder or pillar was ready to be taken out, the end of the boom was swung over it and the load clamped by chains, when it swung out and down into the wagon. The pieces were taken to a dump yard near a railroad track, where a skull cracker having a drop of 60 feet and a weight of 2000 pounds crushed the concrete into fragments. It was then loaded on cars for ballasting and the steel was sent to the mill for re-rolling.

Considering the operations performed in the work of demolishing, the power plant was comparatively small. The compressed air was supplied by two compressors of 30-horsepower each. The air was forced through iron piping laid in the building, and tapped at several different points with wire-wound flexible hose. Thus the drills were operated for cutting the concrete. An equipment of 40 drills was installed, but 25 were found sufficient to do the work, the others being held in reserve in case of a tool breaking or becoming dull. The burners were connected with metal tanks which one man could carry from place to place, but the tubes connecting the tank with the burner were long enough to allow the operator to separate the metal of a half-dozen sections or more before moving the reservoirs.

After the concrete had been cut out there was no time lost. As the compressed-air tool finished its work, the burner took its place, and such was the rapidity of the action that the largest concrete form was severed in two places, lifted out by the derrick, and lowered on to the wagon in less than half an hour.

The only salvage in the wrecking of the building was the value of the concrete ballast and what the mill paid for the steel, which was classified as scrap.—Building Age.

Design for a Bank and Office Building *F. W. Fitzpatrick, Architect*

The Penn Hardware Company's New Sample Room in San Francisco

Splendid Show Room for Penn Hardware

THE above photo engraving shows part of the attractive sample room of A. W. Pike & Company, exclusive sales agents in San Francisco for the well known Penn Hardware. Pike & Company recently moved to their present location at 711 Mission street, near Third, having had the entire ground floor of the new Wilcox building fitted up for their exclusive occupancy. The sample room is one of the most elaborate on the Pacific Coast. The fixtures are solid mahogany, while the show cases are of heavy plate and mirror glass. An extensive stock of Builder's hardware is carried, including one of the largest and most complete lines of locks on the market. The show-room is made especially attractive to the architect who will find there many exclusive suggestions in artistic hardware. Some of the largest buildings on the Coast are now being finished with Penn Hardware.

* * *

Edison Builds Concrete Furniture

Thomas A. Edison, who recently startled the world by saying he would make it possible to build a concrete house for $1000, has declared that in the near future he would put on the market concrete furniture.

Pieces of furniture made in the new way are on their way to Chicago and back to show what they can stand in the way of resisting the handling by freight men.

"I am going to have concrete furniture on the market in the near future that will make it possible for the laboring man to put furniture in his home that is as artistic and durable as that now found in the most palatial residences of Paris or along the Rhine," said Edison; "and it will be cheap, too."

"The newly-wed who now starts out with $450 worth of furniture on the installment plan, will be able to get just as much furniture and far more artistic for half the outlay, when I am done with my plans."

ARCHITECTURAL LEAGUE
OF THE
PACIFIC COAST (Official)

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NOTE.—The members of the Jury are also members of the Education Committee.

RESULTS OF COMPETITION WORK FOR NOVEMBER-DECEMBER

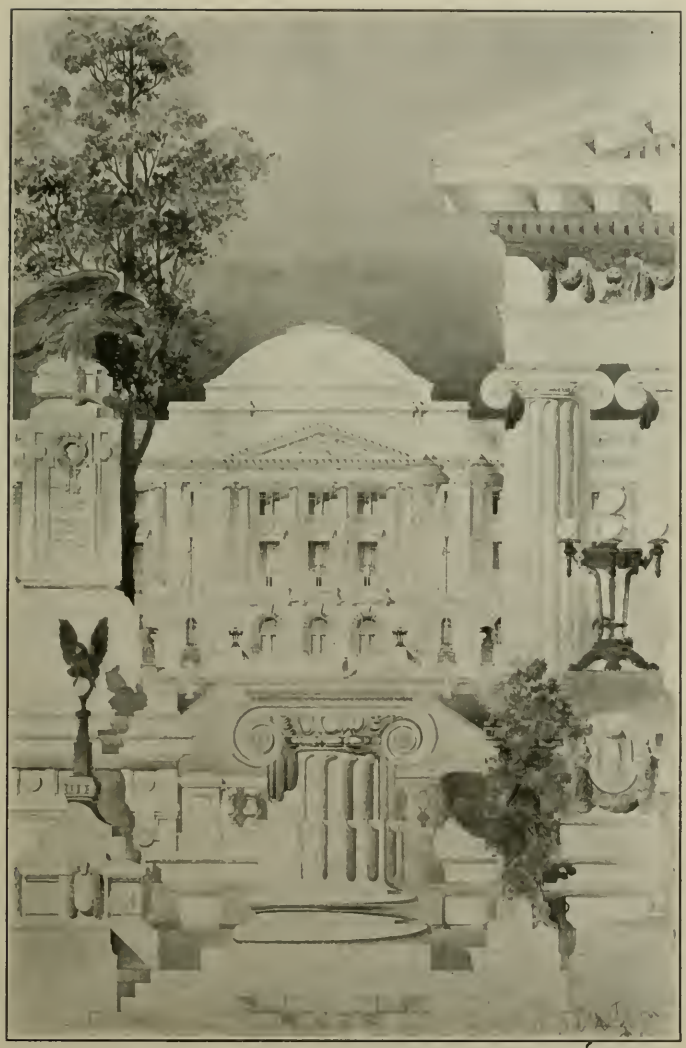
Student Work.—All mentions are credited by the Society of Beaux Arts Architects, New York. First mentions and medals must be confirmed by the New York Society before being credited by them.

Class B Analytique—A Central Motive of a Courthouse.

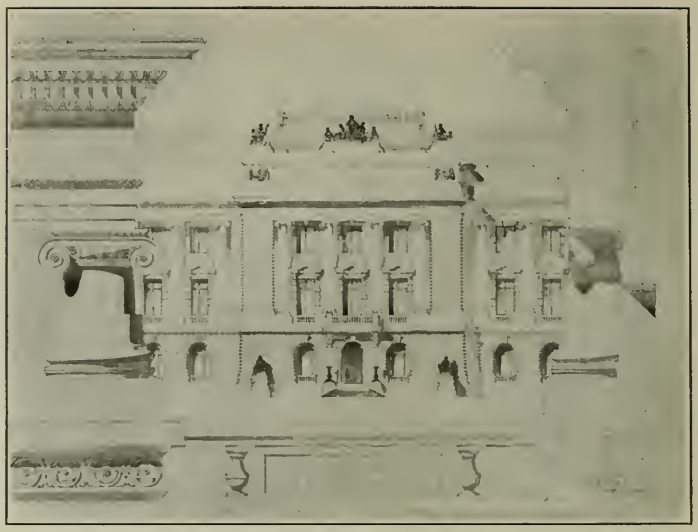
Name	Award	Atelier	Patron
F. A. Chapman	Mention	San Francisco Arch't Club	Kelham
J. P. Maloney	"	" " " "	Brown
J. A. Magee	"	" " " "	"
L. F. Starks	"	" " " "	"
F. Allamond	"	" " " "	Kelham
J. Vollmar	"	" " " "	Brown
W. Spirock	"	" " " "	Kelham
H. R. Schulze	Mention, placed	" " " "	Brown
W. Garren	Mention	" " " "	"
W. J. Graham	"	University of California.	
A. W. Rushforth	"	" " "	
G. E. Comfort	"	" " "	
E. K. Martin	"	" " "	
D. Spencer	"	" " "	
S. L. Jory	"	" " "	
W. K. Macomber	Mention, placed	Seattle Architectural Club.	
P. D. Richardson	Mention	" " "	
R. Olston	"	" " "	
C. A. Hill	"	Los Angeles Architectural Club.	
G. N. Aleon	"	" " " "	

Class B Project—Y. W. C. A. Building.

Name	Award	Atelier	Patron
C. I. Harrison	Mention	San Francisco Arch't Club	Brown
W. J. Helm	"	" " " "	"
F. W. Jones	"	" " " "	"
R. Monson	"	" " " "	"
H. A. Thomsen	"	" " " "	Kelham
S. C. Flawn	"	" " " "	Brown
F. J. Kent	"	" " " "	"
A. J. Horstman	"	" " " "	"
F. M. Kramer	"	" " " "	"
E. Flanders	"	" " " "	"
A. Hewetson	"	" " " "	"



The Central Motive of a Court House
Student Work, University of California



The Central Motive of a Court House *Howard S. Schulze*

Good Concrete Cannot be Made of "Any Old Aggregate that is Dug Up"

RECENTLY an enthusiast for the more extensive use of concrete by the farmer and in rural communities wrote an article on the subject which was published in a Middle West newspaper. We like to find people enthusiastically advocating the use of concrete. We, too, are enthusiastic about it. Unfortunately this writer permitted his enthusiasm to get the better of his judgment when he said that no special skill is required in making concrete and that the materials—all but the cement—may be dug up on the farm.

Perhaps this writer's personal knowledge of concrete makes him look upon its manufacture as something requiring no special skill. Familiarity with the material may have bred in him a contempt for the nicety of manipulation required to obtain good concrete.

We believe there are too many people who attempt doing things with concrete believing that no special skill is required. It is true that once the fundamentals of good concrete are learned and the conditions which make for these fundamentals are realized it is a simple matter to get a good matemial. But first there are the fundamentals.

There is too much of this digging up any old aggregate that is at hand, putting in cement in an amount that seems about right, stirring in some water, and expecting the resulting mud to make good concrete. Dried mud, clinging together after a fashion, isn't concrete.

Good concrete is a homogeneous mixture of clean, hard gravel or broken stone and sand, approximately perfect in grading, with enough Portland cement to coat every particle of the material and fill the voids not filled by the sand—all this carefully and evenly combined with sufficient water to insure crystallization.—Concrete.

Among the Architects

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Three Million Dollars for New Hotels in San Francisco

The Architect and Engineer estimates that at least three million dollars will be expended in San Francisco this year in the construction of high class hotels and apartment houses. This seems an incredibly large sum, particularly since it does not include municipal work, office buildings and small frame structures. It shows that San Francisco is getting back to her own and that confidence has been restored and moneyed men are making substantial loans. Following is a partial list of hotels and apartments to be constructed this year:

From the office of Architects Frye & Schastey, Monadnock building—5-story and basement Class C hotel, southeast corner 6th and Natoma streets.—$60,000.

From the office of Alfred Henry Jacobs, French Bank building, San Francisco—7-story and basement Class C building, Taylor and O'Farrell streets for Chas. Schlessinger; cost, $100,000.

From the office of O'Brien & Werner, Foxcroft building—7-story and basement Class B hotel, Hyde and Geary streets, for Jessie Bryan; cost, $100,000.

From the office of David Coleman, Metropolis Bank building—7-story Class C apartment hotel, Jones street, for M. Fisher; cost $90,000

From the office of Bliss & Faville, Balboa Bldg.—12-story additional wing and tower to St. Francis hotel, Powell street; cost, $750,000.

From the office of Righetti & Headman, Phelan Bldg.—7-story and basement steel, frame and concrete hotel for Mrs. Emily Benedict, Geary and Taylor streets; cost, $75,000. (Contract let).

Six-story and basement reinforced concrete apartment, Bush street and Chester Place, for Dr. Crowley; cost, $40,000.

Seven-story and basement Class A hotel, Geary street; name of owner wtihheld for the present; cost, $150,000.

Five-story reinforced concrete hotel, Mission street, between Seventeenth and Eighteenth, for J. Allec, 2148 Folsom street; cost, $30,000.

From the office of Henry C. Smith, Humboldt Bank building—Group of frame and plaster apartments on Russian Hill; cost, $200,000.

From the office of O'Brien Bros., Clunie building—5-story and basement Class C and steel frame apartment, Jones street, south of Ellis for Baldwin Estate; cost, $45,000.

From the office of Willis Polk & Co., Merchants Exchange—8-story Class A hotel for University Regents, Sutter street; cost, $500,000. (Plans being revised.)

From the office of Hladick & Thayer, Monadnock building—6-story Class C hotel on Ellis street; 4-story apartment house on O'Farrell street; total cost, $80,000.

From the office of George W. Kelham, Crocker building—7-story and basement Class C and steel frame hotel, Third and Howard streets for Dr. Morton; cost, $100,000.

From the office of Houghton Sawyer, Shreve building—7-story and basement Class C apartment house for Clay M. Green; cost, $100,000; also an 8-story apartment house to be erected on Nob Hill and cost $200,000.

From the office of L. B. Dutton & Co., Chronicle building—7-story and basement Class B store and hotel building, northwest corner Grant avenue and Bush street for Mrs. Anna Kessing; cost, $80,000.

From the office of Welsh & Carey, Metropolis Bank building—5-story Class C apartment, south side of Geary between Polk and Larkin, for Sheahy Estate; cost, $80,000.

From the office of Frederick H. Meyer, Humboldt Bank building—7-story and basement Class A hotel, southeast corner Bush street and Grant avenue, for Mortimer Fleishhacker; $100,000.

From the same office, a 6-story Class C hotel, to be erected on Sutter street; cost, $75,000.

In addition to the above hotels, there will be the $500,000 Standard Oil building in the office of B. G. McDougall; a 5-story Class A store and office building for the Crocker Estate at Market and Ecker streets, to cost $175,000; 9-story Class A store and office building for the Sharon Estate from plans by George W. Kelham; 6-story Class A loft building for the Sharon Estate from plans by Reid Bros.; and 5-story Class A lodge building for the German House Ass'n (contract let). Plans by Architect Frederick H. Meyer.

Moves to Fresno

J. Carl Thayer, the Visalia architect who recently moved to Fresno was given the following notice in the Fresno Republican:

J. Carl Thayer, an architect who was the designer of the First Presbyterian church and the Visalia club at Visalia, has decided to come to Fresno and will establish offices in the Forsyth building. His office equipment is on the way here and the family came yesterday to make their home in Fresno. Mr. Thayer will maintain a branch office at Visalia, but will be in Fresno himself.

Thayer was formerly located in New York City, but came to Visalia to design the sugar factory of that place, which was built by the Spreckels people. He was also the architect who designed the $40,000 Lemoore grammar school, which is now under construction. He designed the Hanford opera house, now being built by ex-Senator E. O. Miller. Thayer has been connected with the Southern Pacific Railroad company as an architect.

San Francisco Chapter, A. I. A.

The regular monthly meeting of the San Francisco Chapter, American Institute of Architects, was held at the Chapter rooms, Lick building, on Thursday afternoon, December 21st. The meeting was called to order by Mr. McDougall.

Mr. Edward G. Garden, late of the St. Louis Chapter and an Associate of the A. I. A., having formerly made application for membership in the San Francisco Chapter, was announced an Institute member of the Chapter.

The following communications were received and ordered placed on file: from the St. Louis Chapter, A. I. A., regarding the membership of Mr. Edward G. Garden in the San Francisco Chapter; from the Architectural League of New York, circular of information, etc., in regard to its annual exhibition; and from Glenn Brown, Secretary of the A. I. A., pamphlet regarding the location of the Lincoln Memorial.

On motion duly made, seconded and carried, resolutions were adopted urging Congress to secure the site recommended by the National Fine Arts Commission for the location of the Lincoln Memorial; and to have copies of said resolutions forwarded to the California representatives in Congress and the Senate and to Glenn Brown, Secretary of the A. I. A.

A copy of the recently adopted Standard Documents of the A. I. A. having been received by the Chapter, the Secretary announced that in as much as only the Institute members had received copies of the Documents, he suggested that it would be of advantage to the members to familiarize themselves with the Documents.

Sacramento Architect Kills Himself

William H. Hamilton, architect, who drew the plans for the original Weinstock & Lubin building, which burned down at Sacramento, committed suicide at his home in Oakland early in December by firing a bullet into his heart.

Hamilton resided in Sacramento several years about twenty years ago and there are many buildings in that city built according to designs prepared by him. The Pythian Castle is the most prominent of them.

Worry over an invention upon which he was working is believed to have caused Hamilton to take his life. He is survived by a widow.

Talks on Polytechnic Schools

Architect Norman F. Marsh addressed the manual arts teachers attending the meeting of the California State Teachers' Association in Los Angeles last month on the subject of planning and equipping manual arts buildings. Mr. Marsh discussed the question exhaustively and outlined the progress that has been made in the development of such schools in Southern California.

Plans for the Polytechnic High School at Pasadena prepared by Mr. Marsh are attracting the attention of educators in the East. The polytechnic feature of high school education has been developed further in Southern California than in any other section of the country.

Harlan Updegraph, of Washington, D. C., specialist on school administration of the Federal Bureau of Education, on a recent visit to Los Angeles inspected the plans of the Pasadena school and expressed the opinion that it would be the finest school of the kind in America, surpassing the Soldan manual training high school at St. Louis, which has long been considered the best institution of that character. At the request of Mr. Updegraph, Mr. Marsh is furnishing the bureau of education with a duplicate of the Pasadena plans for record at Washington.

Architectural Club Elects Officers

The San Francisco Architectural Club has elected the following officers for this year:

Tobias Bearward, president; Harry E. Nye, vice-president; Barker W. Estey, secretary; George Greenwood, treasurer; and Ernest Hildebrand, George W. Kelham and John Bagley, Jr., directors.

At the conclusion of the installation ceremonies the club gave the newly elected officers a banquet.

Will Design Many School Houses

Architects Stone & Wright of Oakland and Stockton have plans for new school houses under way that represent a probable expenditure of more than $500,000. The work on the boards includes a Union high school at Lodi to cost $150,000; grammar school at Stockton to cost $75,000; a $60,000 school house at Oak Grove; a $40,000 building at Corning; and a $100,000 building at Modesto.

Key Route Depots

The Realty Syndicate is planning to erect a number of depots for the Key Route between Oakland and San Jose. The first station will be built at Berkeley, and plans for an attractive two-story structure of orange colored brick and terra cotta have been made by Architect Washington Miller.

Will Have Fine Club Rooms

Architects Bugbee and Bugbee of San Francisco are preparing plans for extensive alterations to the top floor of the Techau Tavern. Elaborate quarters are to be fitted up for the San Francisco Alaska Club, a new organization organized for the purpose of promoting trade between San Francisco and Alaska. H. H. Hart, the millionaire mining man, is president of the club.

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COPYRIGHT IN ARCHITECTURE

Since we printed the article from the London Times discussing the new Copyright Bill before the House of Commons, several leading American journals have touched upon the matter and in one instance, the passage of a similar bill in this country was urged. There appears, however, to be a difference of opinion among architects with regard to the usefulness of a copyright bill.

Some consider architectural copyright as retrograde and in opposition to the spirit of the age, although they themselves would be "registered" into a sort of Mediaeval guild, on the pretense that this benefits the public; but if we throw all altruistic nonsense out of the question, we shall see that copyright in design would at least save the annoyance of seeing some of one's original ideas embodied in a building, for which one had gone to considerable labor and expense in a competition, while the glory and gold were gained by someone whose designs were not carried out exactly as exhibited in the competition when the building was erected.

Fairness and just distribution of credit and remuneration are the two things now necessary to improve the status of architects and cause a healthy growth of architecture. The idea of "Registration" would only slightly improve the status of business, if at all, and those aided by it would be those least needing aid, and if art powers were one of the qualifications, would mean really the stereotyping of the ideas of certain men of the present day. The English Copyright Bill is clearly antagonistic to Registration, which will give heart to assistants and artists whose spirits have been dampened by a prospect of a Registration which would exclude them from taking fees, if not from making drawings, in the interests of a few who desire to rank higher than their own merits really entitle them to, and who have the means and leisure to draw up rules for examinations which others (but

not they themselves) have to pass before they may put a brass plate with "Architect" upon it on their doors.

ACCURACY

Not so very long ago we received a letter from a San Francisco architect who is noted more for his idiosyncrasies than as a first-class designer, calling our attention to certain errors which had appeared in this magazine, principally about himself, and condemning the publication of articles that seemed to him to savor too much of the newspaper brand. He thought we should confine ourselves to technical articles that appealed exclusively to the architect and engineer. Regarding this latter complaint we will have something to say later. As to the charge that not sufficient regard is taken to insure accuracy, we feel that in the long run fewer mistakes creep into these pages than the average high class magazine—technical or otherwise. No publication can expect to be infallible. Because this complaining architect referred to a leading eastern architectural journal as an example of what he undoubtedly considered a "perfect paper," we are constrained to call attention to a few errors—unpardonable ones, it seems to us—that appear in the current number of the Architectural Record, generally recognized as the standard architectural journal of the United States.

In an article on "The New San Francisco," by one "A. C. David," the building designed by Architect L. B. Dutton for Balfour, Guthrie & Co., is credited to Messrs. Bliss & Faville; the A. M. Robertson building is reported as having been designed by A. B. Foulkes instead of Edward T. Foulkes. William Curlett & Son are referred to as Curlett & Sons. Mr. Curlett has but one son. The former firm of Lansburgh & Joseph, which designed the Orpheum, and about which the Record says "the design has some merits, but its cleverness merely emphasizes its bad taste," is spelled Landsberger & Joseph, while the architect of the Bohemian Club is given as George W. Kilham instead of Kelham, and Loring P. Rixford, who was associated with Mr. Kelham, and who is really the man who designed the building, gets no credit at all. And so on ad infinitum.

PHOTOGRAPHS TO PROTECT THE SUB-CONTRACTOR

There is a growing tendency among sub-contractors to insure themselves against possible loss or claim for damages, by having a special clause inserted in their contract with the general contractor, permitting them to take photographs of the work on a building as construction progresses. This is done that the sub-contractor may have some tangible proof as to the condition of the building on the day he was expected to start his part of the work. It is a very good idea, and according to those who have followed it, has been the means of saving them many an unjust forfeit.

An instance showing how the sub-contractor may be made to suffer, happened in Baltimore recently. Says an exchange:

> Learning wisdom from a recent experience in New York, wherein a sub-contractor for the woodwork in a large building forfeited some $2000 for a delay for which he was in no way responsible, simply because he was not in a position to prove that on a specified date the building had not progressed to the anticipated degree of completeness, this same sub-contractor found himself in a very similar position regarding two contracts for another large building in Baltimore. On the date when his contract stated that the building would be ready for him to begin, he found conditions making it physically impossible for him to even secure his measurements. So he had these conditions photographed. By so doing he not only got himself disliked, but stirred up a pretty row.
>
> A month later when the building should have been ready (but was not) for him to begin on his second contract, he arranged to have another series of photographs made, but the powers in control of the building peremptorily refused to allow the photographs to be made.
>
> Had he only insisted upon the insertion in his contract of a clause giving him the right to photograph conditions on and after the initial date, he would have had ample protection from a repetition of his New York experience, which cost him $2000, simply because of the lack of this evidence.

State, County and Municipal Engineering

Good Roads—Water—Sewers
—Bridges—Fire Protection

Municipal Garbage Reduction Plant

By W. H. RADCLIFFE

SOMEBODY once said that a modern packing plant utilizes every part of the American hog except the squeal. In point of efficiency the new Municipal Garbage Reduction Plant of Columbus, Ohio, belongs in the same class, for in disposing of 80 tons of garbage every day, it wastes nothing except the water in the garbage.

This new plant is especially interesting by reason of its saving $35,000 to $40,000 per year in the cost of collection and disposal of garbage, the fact that it is the first municipal plant of its kind ever erected, and because throughout its construction and operation the most modern and efficient methods have been practically applied.

Previous to 1895, the scavenger system was in use in Columbus for the removal of garbage, rubbish and dead animals. Each householder, according to this system, hired scavengers to haul the refuse and dispose of it, or else did this work themselves.

From 1895 to 1905 the city contracted for the collection and disposal of refuse, paying for it once a year. This system was never satisfactory, the collection service being poor and unsystematic. On Sept. 25, 1905, the City Council passed a resolution requesting plans, specifications and estimates of cost for providing a means for disposing of the garbage collected by the city.

As a result of this, Mr. I. S. Osborn, a well known Cleveland engineer was selected for the work in July, 1908. The plant was erected at a cost of approximately $190,000 and placed in regular service in July, 1910; since that time it has been in continuous operation, self-supporting itself by the sale of by-products, which consist chiefly of grease and fertilizer.

The reduction plant was designed with a capacity for disposing of 80 tons of garbage within twelve hours, or 160 tons per day, when operating continuously for 24 hours. The capacity is sufficient to take care of the city for a number of years and at the same time care for any emergency in case of breakdown.

The plant as a whole consists of four buildings, the Unloading building, the Reduction Building, an Office Building and a small Stable.

The Unloading Building is used for the unloading and assorting of all garbage delivered at the plant. It is 45 feet by 85 feet and has elevated railway tracks extending through it. The Reduction Building contains the reducing machinery consisting of digestors, roller presses, grease separating tanks, refining and storage tanks, drying equipment and evaporators. It also contains the boiler plant, machine shop and water supply pumps. The part containing the digestors, presses, dryers and storage rooms is three stories high, and the other part one story high. This entire building covers a space 80 feet by 167 feet and is provided with a radial brick chimney, 72 inches in diameter and 150 feet high, constructed for the boilers and the gases from the reduction machinery.

Both the Unloading Building and the Reduction Building are fire-proof with steel columns, floor beams and roof trusses, and concrete floors. The walls are of brick, and the roof is constructed of hollow terra-cotta tile on which is laid 4-ply J-M Asbestos built-up roofing.

The Stable is a two-story building, on the ground floor of which are stalls for 106 horses and the harness room; feed is stored on the floor above.

When garbage is delivered at the plant, it is dumped into loading cars, weighed, and then spread upon the floor of the Unloading Building where the free water is drained off and the grease in the swill water separated by evaporation. After the garbage is assorted, it is conveyed to the digestors, of which there are eight, where it is cooked from six to eight hours with steam at 60 to 70 pounds pressure. When cooked, it is discharged into a receiving hopper which is directly connected to a roller press. Four digestors, one receiving hopper and a roller press constitute one unit, and there are two of these units in the plant.

As the material passes through the press, the water and grease pressed out

are conducted to separating tanks where the grease is separated from the water by gravity. After separating the impurities from the grease by heating, the grease is pumped into storage tanks for shipment and sold for approximately $100 per ton.

The tank water, after the grease has been separated, goes to an evaporator where it is condensed and comes out in the form of a syrup. The solid refuse from the roller presses is fed into a revolving cylinder dryer constructed with a steam jacket and a blower. To this material, when dry, is added the concentrated syrup from the evaporator, which produces a high grade of tankage from a mechanical and fertilizing standpoint, and this is stored for shipment and sold for approximately $10 per ton.

The electric current for both lighting and power is furnished by the municipal light plant at the cost of 1½ cents per kilowatt-hour. An independent motor is connected with each power driven unit and operated with 440 volt, 60 cycle, 2 phase current. The boiler plant consists of three horizontal tubular boilers 78 inches in diameter by 20 feet long. Two of these boilers are in regular service and the third is held in reserve.

During the first six months of 1911, there was received at the plant 7,066 tons of garbage which resulted in net receipts of $29,615. This showed a profit of $2.07 per ton over the cost of disposal of the garbage.

As an illustration of what can be done by a Municipal Garbage Reduction Plant efficiently designed and carefully operated in a city of 182,000 inhabitants, this Columbus plant establishes an encouraging precedent.

Anent the New Mechanics' Lien Law

The California Building Law Association of San Francisco is endeavoring to educate architects and owners to the necessity of complying with the regulations of the new law in regard to mechanics' liens that was passed by the last legislature. This law makes this lien a direct lien upon the property on which labor has been performed or materials furnished, and not upon any fund which is supposed to be in the owner's hands. In order that those interested may be kept posted the Association has addressed a circular letter to architects and surety companies asking that a bond be used that is in accordance with the provisions of the lien law and not use the old form of completion bond, as is being done in some instances.

Brick Road Planned

A highway of vitrified brick through mountains and over prairie from Seattle, Wash., to the Gulf of Mexico, is the dream of a Western organization headed by John Brisbane Walker, founder of the Cosmopolitan magazine. At Denver actual work on the highway is under way, the State of Colorado having appropriated $10,000,000 for the work. A stretch of the road 150 miles in length is being constructed south of Denver. Mr. Walker recently made a trip through that part of Texas to be crossed by the proposed highway. It is proposed to enter the highway into Texas from Colorado near Texline, thence in a straight line south through Houston to the Gulf of Mexico. Harris county, of which Houston is the county seat, already has constructed her part of the road, it being represented in 40 of the 300 miles of boulevards leading from all parts of the county to Houston.

In support of the Seattle-to-the-Gulf highway movement, Mr. Walker has prepared figures which show the relative cost of transportation by rail and by auto; also the cost of railroad construction at 50 cents per tie and the cost of permanent vitrified brick boulevard construction. Mr. Walker believes the highway will be built and in operation within ten years.

New Highway Plans

The California Highway Commission has completed its preliminary tour of the State, according to a report issued by State Highway Engineer Fletcher. The members have traveled by automobile from a point near the Oregon line in Del Norte county, down the coast to San Diego; from San Diego to El Centro in Imperial county; from Beaumont in Riverside county to Los Angeles, and thence to Bakersfield and through the San Joaquin and Sacramento valleys to the Oregon line at Coles. They also have inspected the road from Tehama to Sacramento on the east side of the valley; the road from Sacramento to San Francisco by way of San Joaquin county and Livermore; the road from Oakland to Santa Cruz through San Jose; and the road between Vallejo and Hopland, passing through Napa and Lake counties. In all they have traveled over 4600 miles of the roads of the State. The inspection trips were made principally to secure a better understanding of the local conditions preliminary to expanding the $18,000,000 recently voted for the State highways.

Profit Sharing in Municipal Gas Plant

For a period of five years the Stafford, England, municipal gas department has had in operation a system of profit sharing that appears to have proved satisfactory.

When the total cost of manufacture and distribution of gas is less than 20

cents per 1000 cubic feet of gas sold, a bonus equal to one-fourth of the difference between that sum and the actual cost shall be divided among the workmen and clerks who have been employed in the department for not less than three months during the year in which the bonus has been earned. In any year where special charges, such as for main-laying operations, have been charged against revenues, the amount of same is to be deducted from the true manufacturing and distributing charges, in addition to the net cost of coal, rates and taxes, depreciation, and depreciation on cookers, etc., and consideration is also to be given to the profit and loss on gas fittings.

The following are the bonuses paid to the men during the past five years: 1906-7, 7½ per cent on total wages paid; 1907-8, 9 per cent on total wages paid; 1908-9, 9¼ per cent on total wages paid; 1909-10 9½ per cent on total wages paid, 1910-11, 10½ per cent on total wages paid.

Good Roads Notes

It seems to be fairly well established that the macadam road will not live under automobile traffic unless its surface is treated to withstand the suction. Various kinds of oil and tar treatments are used with varying success. Some districts are putting down brick pavements on top of the macadam. The experiment is now being tried in New York State, and it seems to be successful, of putting a coat of asphalt directly on top of an old and well packed macadam road.

To prevent automobiles from cutting corners too close and interfering with traffic that proceeds straight down the street, Redlands has adopted the plan of painting a broad white line showing the proper curve for them to take. It is believed that this will develop powers of suggestion and serve the purpose of a traffic officer at the crossings.

The national road authorities have it figured out that the states are now putting $150,000,000 per annum into the business of making and repairing and maintaining roads; and that this is twice as much as was spent seven years ago.

Municipal Power Plant Recommended for Los Angeles

E. F. Scattergood, chief electrical engineer of the power bureau of the aqueduct, returned to Los Angeles recently after seven weeks spent in other places studying the more important hydro-electric power systems and the electric current distributing systems of the country. The report of Mr. Scattergood is briefly as follows:

The inspections of the more important hydro-electric power systems and distributing systems of this country were made by Consulting Engineer Harris J. Ryan,

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Assistant Engineer T. A. Panter and myself with the result that we have secured much valuable data and information as to the good and bad qualities of the various types of machinery and equipment and methods of operation based on the experience of those in charge of these systems.

We saw a number of generating systems and I feel confident that the Los Angeles aqueduct power system will deliver power at a considerable lower generating cost than that for which it can be delivered to any other city in the United States excepting those in the vicinity of Niagara Falls.

Securing a low generating cost is, however, but a part of the fight to secure cheap rates to light and power consumers which is the end to be sought and the only real basis for comparison.

Pasadena's municipal plant has a higher generating cost than that of the companies supplying Los Angeles, but can offer consumers lower rates than can be secured for the consumers of Los Angeles under present conditions. The generating cost at Niagara is still much lower, and yet the rates to consumers in the surrounding cities and towns are even higher than in Los Angeles at the present time.

With a complete municipal distributing system and an amount of business equal to that within the city for the year 1910, there could be established a 6-cent rate with a proportional scale for all classes of consumers, and, at the same time, experience a net profit, including interest on the investment and an allowance for depreciation and bond payments, of $700,000 annually. With the total business for the year 1913, excluding railway power, this annual net profit would be far in excess of $1,000,000 with the same 6-cent base, or the rate to consumers could be made proportionately less.

In that statement I have tried to strike a mean, giving both a reduced rate to the consumer and a large profit to the city for the benefit of the man who pays the taxes.

Concrete Ornamental Posts

A new venture in municipal lighting is being made by Venice, Cal., with a concrete ornamental post, designed by City Engineer Lewis. The city will manufacture them to sell to property owners at cost and furnish light free of direct charge. Molds made to order have been procured by the city and all preparations for producing the standards in municipal yards are complete. The post itself will cost $9. The total expense of setting up the concrete post, equipping it with electric light and connecting with conduit is placed at $15 each.

Five Day Law Unconstitutional

Superior Judge Willis of Los Angeles, has upheld the decision of Police Judge Rose who declared unconstitutional the law passed by the last legislature that an employe must be paid within five days after his discharge. The test case was that of the people against Murdoch, wherein it was claimed that Murdoch failed to pay a certain employe within five days after being discharged. Judge Rose held the law, under which the action was brought, unconstitutional, and his decision has been upheld by Judge Willis in the superior court.

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HEATING AND LIGHTING

Plumbing and Electrical Work

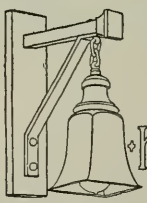
Specifications for Electric Wiring

A UNIVERSAL specification which can be used for all classes of electrical equipments is a subject that has long been before the architects of the United States, but has never yet been solved, says Harvey E. Bloomer, electrical inspector of the Milwaukee Board of Fire Underwriters, in a paper read before a recent meeting of the Milwaukee Architects' Club. The Western Association of Electrical Inspectors appointed a committee to prepare specifications—one which could be adopted for all classes of dwellings, one for store and office buildings, and another for factories—but when submitted to the association it was decided that although great care and considerable thought had evidently been given the matter, the specifications did not meet the requirements, and it was finally decided impossible to construct a universal specification. To quote Mr. Bloomer:

Inasmuch as the Western Association, composed of men of ability in electrical engineering, have come to the above conclusion, I am inclined to believe that the most advisable method to adopt in making specifications is to state the number and location of lights; the kind and location of switches, the location of cutouts, the place where the service is to enter, where the meter or meters are to be located, and the kind of wiring, whether knob and tube, rigid or flexible steel conduit or moulding. State that the wiring must be neat and in a workmanlike manner and in conformity with the rules of the Board of Fire Underwriters. It would also be well to add that before the first installment is paid a letter of approval must be secured by the contractor from the Board of Fire Underwriters.

I have observed in many specifications obsolete and irrelevant terms indicating that a general specification such as those published in book form had been selected and filled in to suit the installation that it was intended to cover. As a consequence the specifications were lengthy, contradictory and misleading. It is this embarrassment, I am informed, that the architects are endeavoring to avoid, and consequently I suggest that the specifications be brief, explicit and free of any statements as to how the equipment should be installed excepting that it must be done in a neat and workmanlike manner, etc. By adding that the material and workmanship must meet the approval of the underwriters and conform to their rules in every respect and detail it covers everything that you might mention and saves you considerable time and possible errors. As the underwriters' rules only take care of the capacity of wires and not the drop in voltage, it would be advisable in large installation that the maximum percentage of drop be specified.

Specifications are important and necessary in connection with electrical construction, yet there are numerous other very vital features which should receive close and careful attention. One is the time when the electrician is permitted to



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perform his work. Too often has the electrical work been installed at the same time as the plumbing and heating and frequently with the result that the electrical installation, which was first class and worthy of praise, has become extremely menacing, occasionally resulting in a fire, owing to having been disturbed and crossed with pipes and other objects. I would advise that the electrician be prevented from working until all other mechanics are through and the house ready for lathing. Then, after the equipment has been inspected, you will know positively that it has not been disturbed. I would also advise that the lathers be permitted to work only after you are assured that the equipment has been inspected and accepted. The suggestion, however, refers only to concealed knob and tube construction, as rigid steel and flexible steel conduits are not subject to the same misuse.

The underwriters' rules permit 660 watts, or twelve candle-power lamps, to a circuit which the electrician takes advantage of. Frequently after the equipment is completed it is decided when fixtures are being purchased that more lights are desired in some of the rooms than originally intended and consequently the circuits become overloaded. To avoid this, it might be well to specify eight lamps to the circuit as is being done in other towns and then there will be ample capacity to add more lamps, fans, curling irons, etc. To facilitate the work of the electrician and avoid errors and disputes it would be well to furnish him a blue print upon which the location of the fixtures and switches and various devices should be designated. The symbols most favored and most prominently used in designating the kind and location of switches, brackets and fixtures and the number of lights on each are those adopted by the National Contractors' Association, which, I believe, will be pleased to furnish them on request.

With the advance of electricity for domestic purposes, the architect finds that he has new problems to solve and an ever-increasing responsibility. It is but very recently that a new appliance has been introduced that is destined to become more prominently used as the time advances and that is the vacuum cleaner. The installation of this apparatus, also flat irons and all heating appliances, should receive special attention and an individual circuit should be installed for each, the size wire depending upon the capacity of device.

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Residence Heating and Ventilating*

By CHARLES S. PRIZER

THERE is nothing more valuable to an architect in his profession than to keep up with the latest developments in the construction of buildings provided those developments are along sound, safe and conservative lines. Of course, an architect cannot be expected to know everything about all the professions which are involved with his in the designing of buildings and in the construction thereof and in the selection of materials, for he is compelled to rely to quite a considerable extent upon experts in various lines when he attempts to do really good work.

I believe that the time has now arrived when there will be increasing attention paid to the ventilation of residences and I believe that the architect who is up to the times will certainly specialize in the future along the line of ventilating the human habitations which he plans and erects for his clients.

There are but two methods of heating that lend themselves to ventilation as a part of the heating proposition—direct heating on the one hand and indirect heating on the other. Indirect heating consists of pouring warm air into the apartments of a building for the sake of warming them. Direct heating means the heating of the apartments by means of radiators—hot surfaces located in the rooms to be heated. Direct radiation heating I am convinced will not be the permanent heating that will be applied in residences or in any other building, for that matter.

Steam and hot water heating have their proper place but in their direct form they are unsanitary because they involve a negation of ventilation. It is impossible to heat a building by direct radiation located in the rooms thereof and at the same time ventilate that building. It is impossible to have a healthful winter climate in your home provided that home is heated by any form of direct heating be it stoves, radiators or any other method of direct heating. Therefore the system of heating that ought to be applied to residences is indirect heating.

There are but two practical methods of ventilation that can be secured through indirect heating. The one is indirect steam heating where the stacks are located underneath the rooms to be heated, and the air is poured over them into the apartments to be heated and necessarily in heating the apartments you are changing the air in the room constantly.

The other method is that of the warm air heater or the warm air furnace method of heating. These two methods are equally meritorious if they are each one right, with this difference—a modern refinement of heating which will probably grow as people get to a fuller understanding of the hygienic principles involved is the humidification of air in rooms artificially heated. Indirect steam heating does not readily adapt itself to the artificial humidification of the air. That artificial humidification can be had very much better in connection with furnace heating, but with that eliminated there may be said to be no difference as to the merits of heating a building indirectly by steam or by the warm air furnace method, provided both are well done. However there is very great difference—a complete indirect system of steam heat-

* Extract of an address given at the Seventh Annual Convention, National Association of Sheet Metal Contractors.

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ing is very costly to the installer. Most indirect work that is done in residence heating today only applies to some rooms in the building; whereas it is perfectly apparent the sleeping chambers and baths and all of the different apartments in a house should be ventilated.

Steam indirect heating is expensive to install and it is proportionately even more expensive to operate, the fuel cost being at least double the fuel cost of operating a warm air furnace heating plant; in fact complete indirect steam residence heating is so expensive as a proposition that it does not apply to a great majority of the houses that are built from year to year, and even well-to-do people when they know what it costs to install and to maintain, are reluctant to put themselves under the burden of that expense, but warm air furnace heating, if it be properly done, fulfills every hygienic and scientific requirement of the perfect heating and ventilating plant. It is reasonable in its first cost, for you can do an absolutely first installation of warm-air furnace heating in connection with formal ventilation at no greater expense to the owner of the building than he would pay for a system of direct steam radiation heating which is unscientific, unhygienic and indefensible. At the same time one has every advantage that he could possibly get

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from the more expensive methods, provided the installation is correct, the apparatus is what it ought to be and the proportioning of the whole system is right, and that by the way is a very large proviso.

I stand here tonight to advocate warm-air furnace heating as the best method practicable and the cheapest method of good heating that there is in existence, but I am compelled at the same time to admit that the warm-air furnace heating apparatus has been discredited and condemned throughout the country by reason of the defective installation and the use of apparatus of too small capacity. The remedy for that of course is to substitute good installation for imperfect installation. I am not here to blame the retail heating contractors for the state of affairs which exists in the warm-air furnace industry, for I trace back the source of the evil conditions that exist directly to the manufacturer of warm-air furnaces. Whoever builds a machine or an apparatus to perform purposes or functions should say how that machine is installed, and how it is to be used, and just there is where the manufacturers of furnaces have fallen down. Up to this time there have existed no definite authoritative rules for the installation of warm-air furnaces. Everywhere you go and talk to people who install furnaces you will find that in their own estimation they know all about the method of doing this work in the best possible manner, yet strange to say, all of their competitors do bad work. The fact is a very great deal of poor defective furnace installation is to be found. The retail furnace dealers have had no definite rules to go by; each one has known, in some mysterious and wonderful manner, without rules just how to do the work—at least he thinks so, but in spite of what he thinks I would take you through any city and examine one warm air furnace installation after another and subject it to any sound rules of heating engineering and condemn it as insufficient, inadequate and wrong in its proportionment and that exists in such a large percentage of cases that it is certainly no wonder that the public regard warm-air furnace heating as a cheap and inferior method of heating. Where it is installed it is generally because the builder of the house or the owner does not wish to incur the expense of putting in a more expensive method.

Now for the architect, there are various considerations in favor of hygienic heating and ventilating as compared to the other kind. If a client comes to you there is in my judgment no better man to promote your own permanent interests as an architect than by making the particular residence under consideration by him a healthful place for that man to live in during the winter time, but this can only be done by ventilating and installing a warm-air furnace system.

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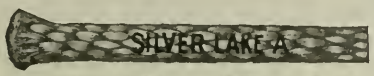

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By the Way

Some Industrial Information Worth the While

Prizes for Fireproof Cottage Designs

Growing interest is being taken in the Clay Products Exposition to be held in Chicago, March 7 to 12.

In addition to starting a campaign to reduce the annual fire loss from $400,000,00 a year to a minimum, the clay workers declare they hope to teach lessons in sanitation.

Thousands of things of beauty and commodity, not commonly associated with clay but are nevertheless products of it, are to be exhibited at the Exposition. Fine works in ceramic art will be displayed and an opportunity will be given to see how pottery is made.

Unique methods of house-building—homes proof against fire—are to be demonstrated. One of the most unusual features of the exposition is to be a display of furniture made entirely of clay.

Clay manufacturers, architects and builders from every part of the United States and from some foreign countries are expected to attend the Exposition.

Every architect in the United States is to be invited to assist in bringing about the transformation of their country from a nation of flat-dwellers to a nation of cottagers.

Criticism of the life of flat dwellers was voiced by Thomas W. Mawson, landscape architect and associate of the Royal Institute of British Architects, who was shocked at the proportion of Chicago's population that live in flats, which he declared to be hideous, unhomelike and veritable fire-traps. He suggested the English "co-operative cottage" plan as a means of bringing about an improvement.

Believing that the united efforts of American architects will solve the question of the low-cost-home for the salaried man and wage-earner, the management of the Clay Products and Permanent Home Exposition announce the following cash prizes for the best plans.

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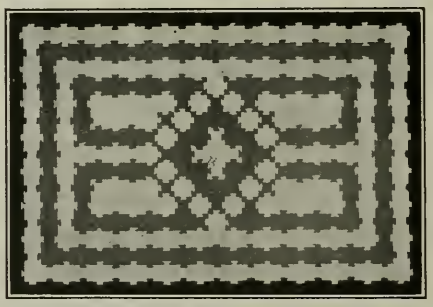

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One hundred and fifty dollars—Third Prize.

One hundred dollars—Fourth Prize.

Awards are to be made on the fourth day of the Exposition by a committee of competent judges. The plans are to be submitted to the editor of The Brickbuilder 85 Water street, Boston, Mass.

The plans are to be for a brick cottage costing from $1500 to $5000. Economy, sanitation and protection against fire are to be considered, as well as architectural beauty.

New Features of the Bradshaw Garbage Chute

A matter of interest to architects, apartment house owners, and the plumbing trade, is the announcement of Bill & Jacobsen that they have perfected the Bradshaw garbage chute, adding some new features and improvements, to the old, and are now able to manufacture and sell at considerably less than the former price.

The new chute is constructed entirely of sheet metal, and has a very convenient method of receiving garbage, besides retaining its cleanliness no matter how often used.

The Bradshaw garbage chute must always be reckoned with in the construction of buildings where the disposal of

THE ROEBLING CONSTRUCTION Co's

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garbage in a sanitary manner is necessary.

Bill & Jacobsen make a specialty of the garbage problem, making chutes with single and double openings fitted to particular places or points where a chute would be most accessible.

The Bradshaw chute has the endorsement of leading physicians, architects and builders and seems to have solved the problem of an absolutely sanitary device for the disposal of garbage in hospitals, hotels, apartments, flats and residences. The first cost is the only cost and there is positively no expense or wear and tear for maintenance after the chute is once in operation. The chute is hermetically sealed thus preventing all dust and odors, and shutting off any food supply for rats or domestic animals.

The chute extends from the basement to the roof, and is thoroughly ventilated and can be connected with either hot or cold water. The water and ash form a lye which cleanses the garbage and cuts all grease, making the garbage sanitary when carted to the street.

When removing or finally disposing of the garbage, by a simple contrivance the seal is raised from the can and all doors are locked until the can is replaced, when the doors are again released. As the door is opened to receive the garbage, an automatic sprinkler thoroughly flushes the chute. The garbage can has a wire screen bottom, allowing the water to percolate through to the cesspool, where it is trapped to the sewer.

From an economical standpoint this system, through the action of the water, compresses or packs the garbage (a very material saving in disposing of same) and either eliminates entirely or minimizes the amount of janitor service now required for the disposal of any garbage.

The chute is made of heavy galvanized sheet metal and iron castings. The main pipe is twelve inches in diameter and cans are made in sizes to suit all requirements. It is installed complete for sewer and service connections and guaranteed.

The chute can be installed at a very moderate price in old as well as new buildings and as stated before, the "first cost is the only cost."

Bill & Jacobsen are looking for active agents in interior towns.

The firm has taken the agency for the Atwood vacuum cleaner and the T. P. Jarvis crude oil burner system in San Francisco and surrounding towns. The Atwood vacuum cleaner is both efficient, simple in construction, and reasonable in price, and can be had in all sizes from the lighter duty residence cleaner to the six and eight sweeper for the apartment house. Some of the buildings now using the Atwood are

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the Knights of Pythias Hall, St. Francis hospital, Taft and Pennoyer building, Oakland, Wiltshire building, Presidio hospital and numerous others.

The T. P. Jarvis crude oil system is claimed to have replaced many of the other makes now on the market, and has proved most efficient in every way.

All Metal Window Screens

The Higgin Manufacturing Company, of Newport, Ky., have appointed Mailler Searles, of 817 Monadnock building, San Francisco, as sales agent for the Northern part of California, which territory extends from the Tehachapi to the Oregon State line.

The "Higgin all metal screen" is known the country over as a screen which is as represented and guaranteed. It is a simple yet perfect means of keeping out objectionable insects. It is made of the best materials, the wire cloth being of bronze and guaranteed not to "wear out or rust out."

The new "Childrens Hospital," San Francisco, has just been completely fitted up with these screens, which are applied in copper slides on the outside stop, or hinges (either top or side) with pivot etc. The screen is made any size or shape and can be made circular or semicircular, and to fit.

The Higgin screen is in use out at the U. S. Marine Hospital, Presidio, San Francisco, and in a large number of residences, etc., in the cities about San Francisco Bay.

The Higgin Manufacturing Company also manufacture a perfect screen door and all-metal weather strips. Their product has a well-earned reputation of sixteen years standing throughout the East and South, but their work is practically new on the Coast.

A New Reinforcing Material

With concrete coming into such universal favor in building construction, the method of reinforcing is of paramount importance. After months of study and exhaustive experiments the Berger Manufacturing Co., of Canton, Ohio and San Francisco, has developed the Rib-Trus, a combination of furring plates and reinforcing which is represented as being effective in applying concrete for floors, walls, and in many other ways in modern construction.

The Rib-Trus plates have a standard width of 24 inches and from 4 to 12 feet long. Each sheet has five longitudinal ribs, six inches apart on centers and varying in height from one-half inch to two inches. The ribs and truss make the plate unusually stiff, and it is claimed concrete can be applied easier and more rapidly than with any other furring plate. This is made possible because of the ribs and truss designs of loops, from which the product derives its name. A series of cross beads, 4 inches apart, run across the plate between each rib, while the loops span them and are parallel with the ribs. The Rib-Trus is made of sheet steel or Toncan Metal, embodying the latter's rust-resisting and anti-corrosive qualities.

The ribs act as beams and the plate is absolutely rigid, no support or centering being required on ordinary spans. Special clips fasten the plates to purloins and when the concrete is applied it engages with the loops, forming a perfect lock. This design of plate produces a dovetail clinch on the underside, which thoroughly reinforces the concrete.

Holiday Greetings

Several of the large San Francisco building industries sent out nicely worded Christmas and New Years greetings to their customers and friends. The card mailed by the Pacific Rolling Mill Company, was filled with encouragement for the future and appreciation of the past. The letter was as follows:

San Francisco, Dec. 21, 1911

To our friends:

The holidays are just upon us and we take this opportunity of extending to you our best wishes for a bright and prosperous New Year.

We are all looking forward with much expectation for the coming year of nineteen hundred and twelve, and we sincerely hope that it will be a very successful one for you.

Thanking you for the confidence placed in us in the past, and soliciting a continuance of your inquiries in the future, we are,

Yours faithfully,

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When writing to Advertisers please mention this Magazine.

Portland Concrete Pile Company Opens San Francisco Offices

The Portland Concrete Pile and Equipment Company, which has established permanent offices at 754 Phelan building, San Francisco, is the patentee and sole owner of the "Portland" concrete pile, the modern method of installing foundations.

Under most conditions concrete piles can be placed for less money than any other means of foundation building, the made in place pile foundation can also be placed in less time. The concrete pile is a permanent substitute for spread footings, square concrete piers, and wooden piles capped with concrete, can be placed in less time, the result assures a more stable foundation, and when properly placed allows a factor of safety that can be acquired by no other known means.

The company has a corps of engineers of wide experience in concrete foundation work, and maintains its head office at Portland, Ore. Branches are established at Seattle, Wash.; Houston, Texas; Baltimore, Md.; Vancouver, B. C., and San Francisco, Cal.

The engineers of the Portland Concrete Pile and Equipment Company, realizing the need of a concrete pile that would meet all the requirements as to economy of labor, time and placing; also the defects of the present systems in use, started in 1907 placing Portland concrete piles.

The Portland concrete pile, aided as it was by its organization, composed of specialists experienced in designing and placing every kind of foundation, office buildings, warehouses, bridges, retaining walls, docks, seawalls, bulkheads and all kinds of concrete structures, both plain and reinforced, at once proved its efficiency and was accepted by the leading architects, engineers and builders.

For concrete piling in general, and for the Portland concrete pile in particular, the following claims are made and can be substantiated:

First—A concrete pile is as durable as rock.

Second—Due to the tapering form of the Portland concrete pile and the fact that the green concrete comes in direct contact with the compressed earth surrounding it, the Portland concrete pile securely bonds itself with the surrounding earth and will sustain a greater load than other piling. The compressed earth is permanently hardened (chemicalized) by the surplus water passing off into the surrounding earth.

Third—Concrete piles insure absolute durability, absolute immunity from the attack of the teredo, electrolysis and the inroads of the animal and vegetable life.

Fourth—Rapidity of construction. No deep excavations for walls and footings, because it is not necessary to keep the heads of the concrete piling below low water line.

Fifth—First cost of concrete piles will be much less than masonry or concrete piers, with as great a supporting power; no secondary cost, as they are permanent; no sawing off of piles, as they can be made of uniform height when green, thus maintaining a top alignment.

Sixth—This system of concrete piling, due to the use of a collapsible former, is the most economical, sure and rapid method of foundation building in loose or filled-in localities that has been developed.

Seventh—This system has the hearty endorsement of those engineers, architects, owners and builders who have had experience with it.

The Portland Concrete Pile and Equipment Company drive two types of piles. The moulded pile, reinforced and cured for thirty days, is driven like an ordinary wood pile. That it will stand rough treatment is proven by its work on the Broadway bridge at Portland, where one of these piles, driven with a stroke of 9,000 foot pounds, was hit 72 blows a minute for 58 minutes, without shattering. In other words, it stood 37,584,000 foot pounds impact without any signs of wear.

The other type is the made-in-place pile. The former, composed of a core and shell, is driven to penetration required or to refusal. The core is then attached to the hammer and withdrawn with it to the leads.

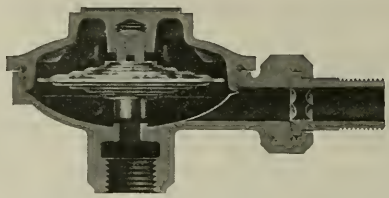
If the pile has been driven in fairly stable ground, the shell is filled with concrete to three or four feet above the ground and the shell withdrawn, the concrete settling into place. If the piles are to be reinforced, the reinforcing steel is placed before the shell is completely filled.

When the piles are placed in unstable ground, or where water exists, and a heavy back pressure is encountered, a bottom dump-bucket is used, the concrete being placed, a bucketful at a time, and rammed into place, the shell being withdrawn a few feet at a time. By means of the rammed concrete, a perfect bond is obtained between the earth and the concrete.

In the last eighteen months the Portland Concrete Pile and Equipment Company have driven, if placed end to end, twenty-five miles of Portland concrete piles, on $4,000,000 worth of work.

Among the structures is the Dallas Oak creek viaduct, 5,500 feet long, and where 3,600 Portland concrete piles were

(Continued on page 123.)



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The trap that's a sure cure for the prevalent ills in vacuum steam heating. Distinctive — not only for the parts put in, but for parts left out. Nothing to cause trouble. No Expansion plugs or floats and no water seal — no sliding contacts.

Passes three times as much water and air as ordinary traps and passes it **without loss of steam.**

Grease, scale or core sand cannot stop it, for a force of 15 to 20 pounds operates it. ***Mr. Engineer*** you want to know more about it. Let us tell you.

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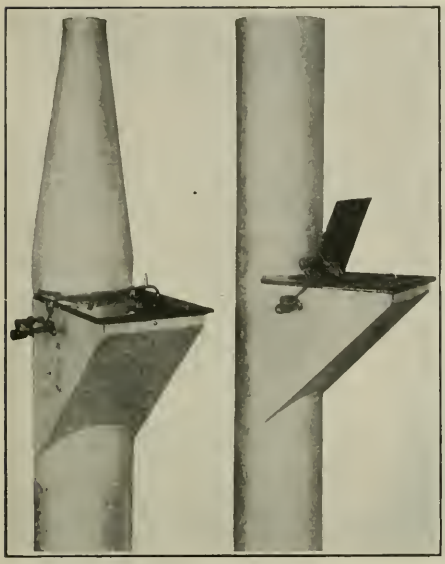

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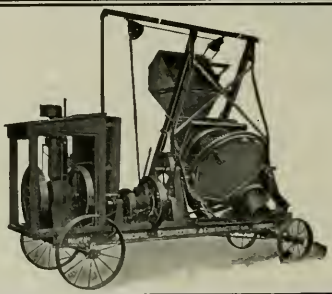

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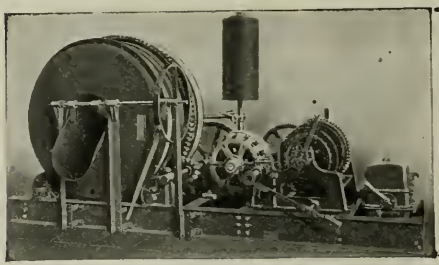

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A SANITARY, FIREPROOF AND
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[Continued from Page 119]

used, making it the second largest job of concrete piles in the world.

Colorado river bridge, on Portland concrete piles, has the longest steel span in the State of Texas.

Houston viaduct, on 900 Portland concrete piles.

Approaches, Broadway bridge, Portland, Ore., a $2,000,000 structure, on 800 Portland concrete piles.

We are glad to see the movement toward permanent construction as offered by the Portland Concrete Pile and Equipment Company, particularly when it means a saving of time and money on heavy foundations.

They have a very instructive booklet which will be mailed upon telephoning Sutter 2678, or by dropping a postal to 754 Phelan building.

Otis Automatic Push-Button Elevator

Here is a residence elevator that is filling the proverbial "long felt want" in the up-to-date house—a passenger elevator that can be operated without the necessity of an elevator attendant, works automatically and with perfect safety, is so simple that a child may run it without danger, and makes every room in the modern home accessible and "livable." The method of operation is thus described:

By pressing a button placed in a hallway, the car is brought to that floor, stopping automatically when opposite the landing. Inside the car we place a bank of buttons which are numbered to correspond with the various floors. By momentarily pressing one of these buttons the passenger operates the car to the desired landing. At the will of the passenger the car is instantly stopped at any point in its travel by pressing the Stop Button.

The passenger has full control of the elevator, as the hall buttons are inoperative while the car is in motion and until the passenger has left the car.

The enclosure doors are provided with automatic interlocking door fixtures which prevent the opening of any door until the car has stopped opposite to the floor corresponding to the button pressed.

The car cannot be operated until the door has been closed and also locked.

Manufactured by the Otis Elevator Company, 17 Battery Place, New York City, San Francisco Branch, North Point and Bay streets.

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because they find it is the best to protect concrete, stucco or brick against the ravages of dampness; it does not chip, flake or peel, nor does it destroy the distinctive texture of concrete. It has been endorsed by the National Board of Fire Underwriters as a fire retarder and therefore will lessen your insurance rate. Will give concrete or wood beautiful different tints. Write at once for booklet and color card.

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The Work of R. E. Noble & Co.

Having heard from various architects and engineers of the satisfactory service given them by R. E. Noble & Co., Inspecting and Testing Engineers, Humboldt Bank building, San Francisco, in testing and inspecting cement, concrete and steel used in many of the large buildings recently erected in San Francisco and elsewhere, the writer made a personal inspection of their laboratories, with the result that he thinks too high mention cannot be made of their complete and up-to-date equipment and organization.

Their steel testing laboratory contains the latest improved 3-screw Olsen Patent testing machine of 150,000 pound capacity with attachments for making tensile, compressive, cross bending and shearing tests of materials of construction, also an electrically driven bending machine for testing reinforcing steel, said to be the only commercial bending machine on the coast for making accurate bending tests of steel.

The cement testing laboratory is complete in detail containing equipment for the grading and proportioning of aggregates for concrete and the testing of road materials. They also have a fully equipped chemical laboratory.

This firm has been established in San Francisco for four years, with Hildreth & Co., of New York as their eastern representatives, with offices in Pittsburgh, Philadelphia, Chicago and in all the important manufacturing centers.

Messrs. R. E. Noble & Co. have inspected materials on such well known buildings as the Palace Hotel, San Francisco; Montgomery Hotel, San Jose; Fresno Hotel, Fresno; Phelan building, San Francisco; Royal Insurance building, San Francisco; Commercial building, San Francisco; White House building, San Francisco; Postal Telegraph building, San Francisco; Y. M. C. A. buildings, Oakland and Honolulu, T. H.; Realty Syndicate building, Oakland; San Francisco Temporary City Hall; Roman Catholic Orphan Asylum; White Garage, San Francisco; First National Bank building, San Jose; Union Trust Bank building San Francisco; Orpheum Theatre, San Francisco; Orpheum Theatre, Los Angeles; Princess Theatre, San Francisco; University of California building, Berkeley; U. S. Army Supply Depot, Fort Mason; Projectile Storage building, Benicia Arsenal; U. S. Engineer, (Fortifications Dept.); U. S. Engineer, (Light House Dept.); St. Dominics Priory, San Francisco and numerous others.

They have recently been appointed to test and inspect materials on the Oakland City Hall, St. Lukes Hospital, San Francisco, and the Pantages Theatre, Oakland.

This is quite a record for a firm so young in business.

H. G. GREENHILL.

ARCHITECTS!

You have been having trouble with Dry Bonds in all Concrete Work We can prevent this with **Master Builders Concrete Filler.** Master Builders Filler will waterproof Concrete and make a surface hard as iron. Does not absorb oil, is used largely for floors with heavy wear; expense nominal.

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KAHN SYSTEM Reinforced Concrete

Suggestions for San Francisco City Hall Site

MORE than forty San Francisco architects submitted plans for the municipal building group to the incoming board of Supervisors and Mayor-elect Rolph. The architects by a large majority selected the site of the old City Hall as the best adapted or, in fact, the only available ground on which to erect the municipal buildings, although there were a few who chose sites for a civic center from Van Ness avenue and Market street to Tenth and Howard streets. The sentiment of the new city government is strongly in favor of utilizing the old site for the new municipal buildings It developed that many thought the present foundations could be used for the new buildings, and it was given as an opinion by architects that the foundation which carried the old superstructure was ample for a modern steel frame building. By using the old site the completion of the new buildings by 1915 would be practically certain.

Biturine as a Steel Preservative

"Biturine," the well known brand of paint for the protection of structural steel, is being used in the frame of the Hellman building, on the north side of Market street, next to the Mutual Savings Bank building. This structure was designed by Architect Frederick H. Meyer. Biturine is a solution and enamel that has been tested out very successfully and its manufacturers claim that it is a positive preventative of corrosion. It is manufactured by the Biturine Co. of America, with branch offices in the principal cities of the United States. The San Francisco office is at 24 California street.

Standard Documents of the American Institute

The American Institute of Architects has been engaged for more than four years in an effort to improve the form of certain documents currently used by architects, with a view to making these documents clear in thought and statement, equitable as between owner and contractor, applicable to work of almost all classes, binding in law and a standard of good practice.

The related Standard Forms now approved by the Institute are: (a) Invitation to Bid; (b) Instructions to Bidders; (c) Form of Proposal; (d) Form of Agreement; (e) Form of Bond; (f) General Conditions of the Contract.

These forms are not put forth to diminish the use of the "Uniform Contract," the publication of which will be continued under the joint auspices of the American Institute of Architects and the National Association of Builders.

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And when we tell you that the **Commer** is the best in the world's market we are prepared to back this fact with records of successful performance in every civilized country of the globe, and an iron-clad guarantee that is unusual in its liberality.

Commer trucks have been in successful service for half a score of years.

Many of them have records in excess of 250,000 miles.

This mileage has been earned in hard and continuous service.

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The Committee has from time to time had the advice of Francis Fisher Kane Esq., Counsel for the Institute; Ernest Eidlitz, Esq., and in the Fifth Edition of its work, the able and careful criticism of Prof. Samuel Williston of the Harvard Law School and the assistance of James W. Pryor, Esq., in its editing.

Concrete Protection

One of the most important features in the construction or renovation of a building is the employment of proper material for keeping the walls dry and sanitary. No one thing except, perhaps, faulty plumbing, is so injurious to health or property as damp walls and basements. And so important is this feature that many brilliant men have devoted both time and money to perfecting waterproofing materials that would actually waterproof concrete, brick or plaster finishes.

It is a well known fact that the market contains a great many so-called waterproofing materials. You have heard their merits discussed by architects and painters, and you have seen the materials applied on many of the buildings of San Francisco; in some cases successfully, and in others their application has been a disappointment.

Have you seen the Flannery building, at the junction of Third, Market and Kearny streets? This building, which was the first concrete structure to be erected after the fire, stands out as a splendid example of what can be accomplished with enamel. It justifies the claim of the manufacturers that they do not have to sacrifice any of the beautifying qualities of their material in order to obtain a first-class waterproofing.

This material, among many other like products manufactured by the Glidden Varnish Company of Cleveland, Ohio, is winning a high place among the architects and painters of San Francisco, and is carried only by the well known firm of Whittier Coburn Company, 301 Howard street, San Francisco.

Oakland Municipal Work

It is expected that announcement will shortly be made of the selection of the architects for Oakland's new school buildings and public auditorium. J. J. Donovan, who came to the Coast from New York City as resident manager for Messrs. Palmer and Hornbostel, architects of the new City Hall, has been selected as advisory architect by the Mayor and City Council, and he has resigned his position with Palmer & Hornbostel. It is understood that Donovan will have the say in naming the architects of the auditorium and different school buildings. It is reported that Lewis Stone will be given the Polytechnic High School, and that Meyer & Reed will secure the auditorium.

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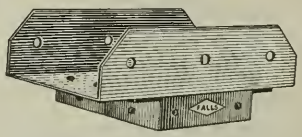

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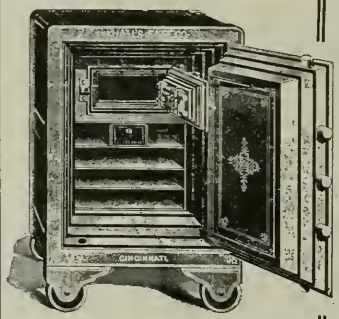

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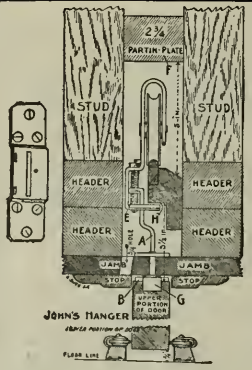

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What the City Engineer
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"Honorable Council, San Diego, Cal.

"Gentlemen: In the matter of the use of cement sewer pipes to be used in the construction of the extension of the sewer system in this city, I beg leave to report that, in company with Councilmen Woods, Dodson and Adams, I visited the city of Los Angeles and vicinity for the purpose of examining into the condition of a number of cement pipes laid in that city for sewage purposes. The cement pipes examined were reputed to have been in use from twenty to thirty years. I found none of them very flattering. Some were in very bad condition, in fact soft enough to allow one to thrust an ordinary pen-knife through the bottom of the pipe with but little effort, the cement having been entirely eaten away.

"*The pervious character of all cement work is a well-known fact; the most dense will absorb from 8 to 10 per cent of its own weight in water, and more often 10 to 20 per cent.* This fact alone would seem to be inimical to the lime contained in the cement, as the absorption of 10 to 20 per cent of liquid sewage, imprisoning the same for an indefinite time, will ultimately evolve hydro-chloric and sulphuric acid gases that would attack the lime in the cement and rapidly decompose the pipe into a spongy mass, as may be seen in the septic tanks at the Soldiers' Home at Sawtelle.

"It also appears that the sewage, after this condition of the pipe has obtained, percolates through the pipe and soaks up the soil immediately under the pipes, decomposing, forming acid gases as before, attacking the pipe from the outside and completing its ultimate destruction, this filtering sewage otherwise becoming very unsanitary.

"It is argued that a cement sewer pipe as it is made under modern methods will be free from any of the above objections. I can only say that it is still a cement pipe, subject to absorption and filteration in a more or less degree, according to workmanship. *A vitrified salt-glazed sewer pipe, burned to the point of vitrification, has been proved beyond all question to be proof against any destroying agent whatever, except fire, and is used in all conservative practice of able sanitary engineers throughout the United States.* There are, however, a number of sanitary engineers who advocate the use of cement pipes, but they are away in the minority. It may, in time, be proven to be good, but under the present very limited knowledge of the subject it is a serious hazard to use it in a $200,000 expenditure. When inspection, hauling and other incidental expenses of the cement pipe is taken into consideration, there is practically no difference in the cost between it and a first-class salt glazed vitrified sewer.

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"A very striking example of the decomposition of cement work from sewage gas may be seen in the septic tank at our county hospital, this city. "Very truly,

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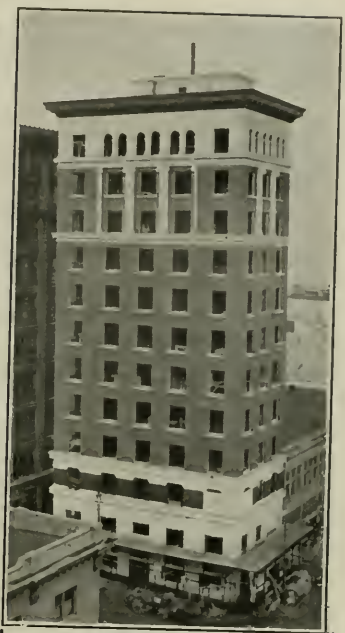

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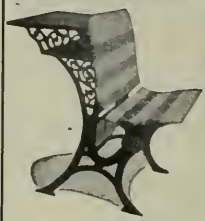

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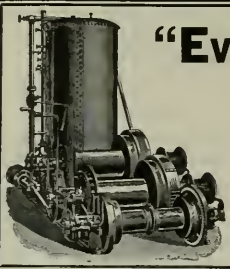

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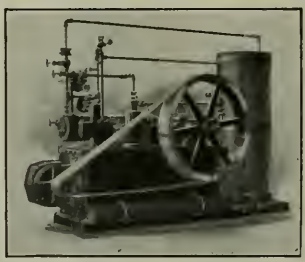

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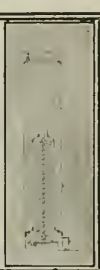

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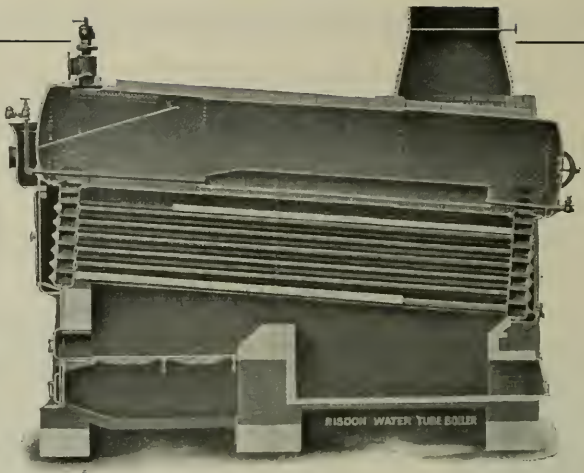

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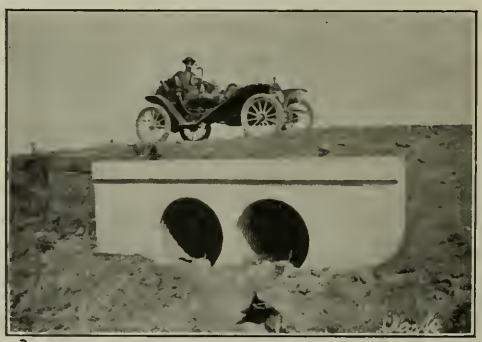

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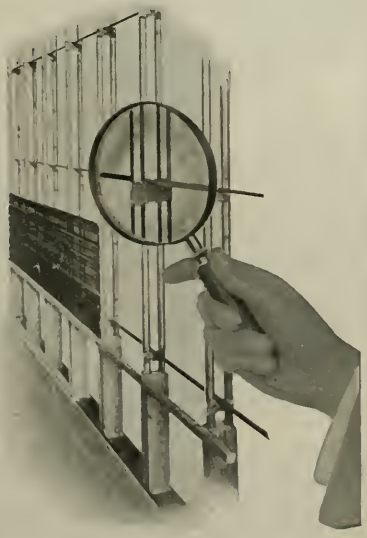

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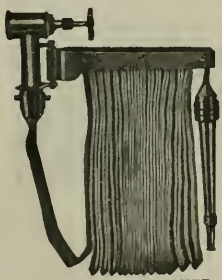

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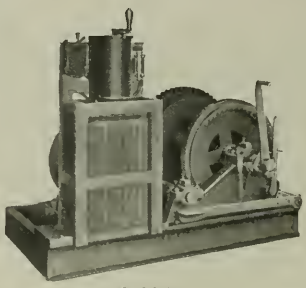

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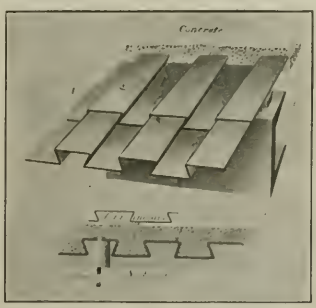

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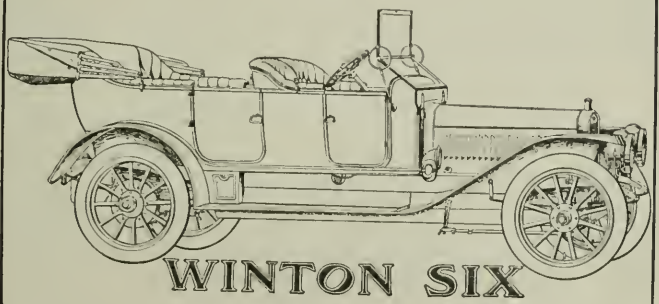

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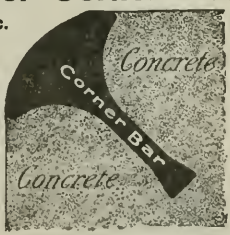

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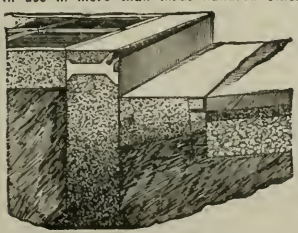

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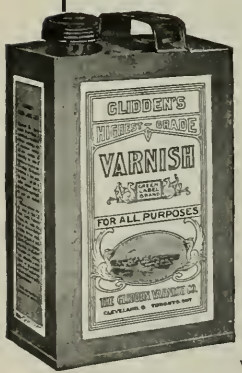

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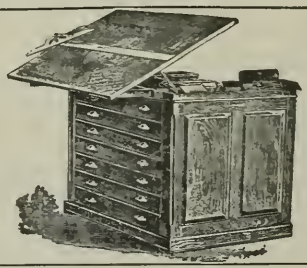

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